

GEORGIA-PACIFIC – LINNTON FIBER TERMINAL CSM Site Summary

GEORGIA-PACIFIC – LINNTON FIBER TERMINAL

Oregon DEQ ECSI #: 2370

12222 NW Marina Road

DEQ Site Mgr: Tom Gainer

Latitude: 45.6229°

Longitude: -122.7949°

Township/Range/Section: 2N/1W/34

River Mile: 3.5 West bank LWG Member ☐ Yes ☒ No

Upland Analytical Data Status: ☐ Electronic Data Available ☒ Hardcopies only

1. SUMMARY OF POTENTIAL CONTAMINANT TRANSPORT PATHWAYS TO THE RIVER

The current understanding of the transport mechanism of contaminants from the uplands portions of the Georgia Pacific – Linnton (Morse Bros.) site to the river is summarized in this section and Table 1, and supported in following sections.

1.1. Overland Transport

A total of five drainage areas have been identified at the Georgia-Pacific site, as shown in Supplemental Figure 4 from ESA (2000). Approximately 92% of the 21-acre site is covered by impervious surfaces, and the vast majority of stormwater drains through the site's underground stormwater system to four outfalls. Overland transport of sheet runoff from the uplands to the river is expected to be minimal (see Sections 10.1 and 10.3).

1.2. Riverbank Erosion

The extent of riprap along the shoreline was determined from bathymetric survey information and from a river bottom sounding investigation by CH2M HILL (2000b) on May 27, 2000. As shown in Supplemental Figure 2-1 from CH2M HILL (2000a), riprap is estimated to extend across much of the shoreline. This shoreline armoring reportedly acts to reduce bank erosion. Evidence of riverbank erosion was not reported in the files reviewed.

1.3. Groundwater

Four shallow monitoring wells have been installed at the site to characterize groundwater. Monitoring wells were installed downgradient from the historic wood treating area, adjacent to the ACF Industries site, and the former Linnton Oil Fire Training Ground (LOFTG) site. Constituents were largely undetected in groundwater samples. "VOCs were detected at concentrations above the method detection limit [downgradient from the wood treating area], which ranged from 1 µg/L to 50 µg/L" (CH2M HILL 2000a). It is not clear whether this range applies to the concentrations of detected constituents or the detection limits. Specific VOC constituents were not identified. A groundwater sample collected from wells adjacent to the former LOFTG site contained detectable concentrations of petroleum; however, VOCs and SVOCs were not detected in the sample. Although groundwater impacts to the site have not been completely characterized, the DEQ has indicated that the site does not appear to be a current source of Willamette River sediment contamination (DEQ 2002a) (see Section 10.2).

DO NOT QUOTE OR CITE.

This document currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or part.

USEPA SF



1466013

1.4. Direct Discharge (Overwater Activities and Stormwater/Wastewater Systems)

There are four stormwater outfalls draining five areas of the site (described further in Section 10.3). In addition, Outfall 1/WR-153 currently serves as a discharge point for stormwater from a portion of Forest Park and the former ACF Industries site located to the west. Historically, excess wastewater from washing railcars at the former ACF Industries site drained into a swampy area located on the Georgia-Pacific site. Stormwater discharge appears to be a potential current and historical pathway for upland releases (see Section 10.3).

The dock was constructed in 1971 to load wood chips on deep-water vessels for export. The dock had no maintenance or ship-refueling capabilities. Overwater releases between 1971 and 1996 were considered minor (CH2M HILL 2000a,c) (see Sections 8.2 and 8.3).

1.5. Relationship of Upland Sources to River Sediments

See Final CSM Update.

1.6. Sediment Transport

The Georgia-Pacific site is located on the west bank at RM 3.5, just upstream of the Multnomah Channel. This portion of the river was characterized in the Portland Harbor Work Plan (Integral et al. 2004) as transitional between the upstream transport zone (RM 5-7) and the downstream depositional zone (RM 1-3). The Sediment Trend Analysis[®] results indicate that the channel environment off of this site is a mixture episodic net accretion and erosion in the nearshore and dynamic equilibrium offshore in the center and eastern portion of the channel. Time-series bathymetric change data over the 25-month period from January 2002 through February 2004 (Integral and DEA 2004) indicate that the nearshore area from the 0 to the -20 foot contour NAVD88 shows either no change or sediment erosion to about 1 foot across site's river frontage upstream of the center of the T-dock. From the center of T-dock downstream, net sediment accretion is evident (up to 1+ foot in extent) both inside and along the dock face out to about the -30 foot NAVD88 contour. The main channel offshore from the site is dominated by areas of no measurable riverbed elevation change.

2. CSM SITE SUMMARY REVISIONS

Date of Last Revision: March 4, 2005

3. PROJECT STATUS

Activity	Date(s)/Comments	
PA/XPA	<input checked="" type="checkbox"/>	PA – November 1999 (CH2M Hill 1999) Supplemental PA – January 2000 (CH2M HILL 2000a) XPA – August 2000 (CH2M HILL 2000b)
RI	<input type="checkbox"/>	
FS	<input type="checkbox"/>	
Interim Action/Source Control	<input type="checkbox"/>	
ROD	<input type="checkbox"/>	
RD/RA	<input type="checkbox"/>	
NFA	<input checked="" type="checkbox"/>	1991-NFA by DEQ for UST (#26-89-0133) cleanup 1995-NFA by DEQ for UST (#26-95-0052) cleanup

A Phase II Environmental Site Assessment was performed by CH2M Hill in 1999.

DEQ Portland Harbor Site Ranking (Tier 1, 2, 3, or Not ranked): Tier 1

4. SITE OWNER HISTORY

Sources: DEQ 1999c, 2004

Owner/Occupant	Type of Operation	Years
Morse Brothers, Inc. – owner/operator	Gravel storage terminal	1999-present
Georgia-Pacific West, Inc. – owner/operator	Wood chip transfer from truck and rail to ship	1995-1997
Georgia-Pacific, Inc. Linnton Fiber Terminal – owner/operator	Wood chip transfer from truck and rail to ship	1971- 1995
Kingsley Lumber - owner/operator	Sawmill, creosote plant, and lumber storage facilities in southern end of property	Active through late 1950s, Inactive until sale in 1971

5. PROPERTY DESCRIPTION

The Georgia-Pacific site is located along the western bank of Willamette River on a 21.5-acre tract (Figure 1). The site is fully fenced and mostly paved. The site lies in an area of mixed industrial, residential, and recreational use. The site is bounded on the southwest by the former ACF Industries railcar cleaning, repair, and repainting facility, to the northwest by a Bonneville Power Administration (BPA) transmission line right-of-way and wetland area that separates the facility from the Portland General Electric (PGE) Harborton electrical substation, and to the southeast by the Owens Corning/Trumbull Asphalt asphalt storage and roofing shingle manufacturing facility. A Burlington Northern-Santa Fe (BNSF) Railroad right-of-way and tracks separate the former Georgia-Pacific facility from the former ACF Industries' facility. The former Linnton Oil Fire Training Grounds (LOFTG) is located at the northwestern corner of the Georgia-Pacific facility on the BPA right-of-way.

A maintenance shop, railcar rollover building, truck scale, railcar rollover and truck tilt-up unloading systems, truck scales, and lab/office building are situated in the northeast corner of the site. An L-shaped wood chip conveyor extends from the central portion of the site to the 1200-ft long ship loading dock. A 15,000-gallon AST and four smaller ASTs for storing and dispensing petroleum products are located in the northwest corner of the site. Three of the ASTs, used to store hydraulic oil, transmission oil, and motor oil, are situated inside a containment berm (CH2M Hill 2000a). It is not known if secondary containment is available for either the 15,000-gallon AST or the truck unloading system. A hazardous material storage shed was located adjacent to the maintenance shop and was used to store oakite (used in late 1970s/early 1980s) and grease primarily. It is not known if the shed had a floor but may have sat directly on the pavement. The remainder of the site is not developed (CH2M Hill 2000a).

Information regarding the lease of submerged lands and/or overwater structures was not found in Oregon Department of State Lands files.

6. CURRENT SITE USE

The site is currently owned and used by Morse Brothers for rock storage and distribution via rail or barge (www.morsebros.com/materi.html). No other information on the current use of this site is available.

7. SITE USE HISTORY

The site was owned by Kingsley Lumber Company, which operated a sawmill, creosote plant, and lumber storage facility in the southeastern half of the site up until the late 1950s. It is not known when Kingsley acquired the property, though it is believed to have been undeveloped land before that time.

Georgia-Pacific purchased the site from Kingsley Lumber Company in 1971. At that time, most of the property was in an undeveloped state. Construction of the facility began in 1971, at which time the nearshore area was dredged for the construction of a dock, followed by a maintenance dredging event in 1985. The facility operated as a wood chip transfer facility from 1971 to 1996. The facility was transferred from Georgia-Pacific, Inc. to Georgia-Pacific West, Inc., a wholly owned subsidiary of Georgia-Pacific, Inc., in January 1995.

Chips were virgin fiber and contained no wood preservatives, resins, or other constituents. Originally, over half of the chips were delivered by railcar. At its peak, the vast majority of chips were loaded and unloaded via ship (44 ship loads in mid-1980s), but by the mid-1990s, most chips arrived by truck. In 1971, a pneumatic conveyor system was used to convey chips from unloading areas to the asphalt-covered chip storage area in the central portion of the site. The pneumatic system was replaced by a conveyor belt system in 1976 to reduce particulate emissions. Chips were segregated by type in the central portion of the site until adequate quantities were available for export by cargo ship. Bulldozers were used to push chips to reclaim areas. Conveyors then moved the chips from the reclaim areas to a pneumatic conveyor feeder that blew the chips into the ship holds. As the amount of timber harvested in the Pacific Northwest declined in the 1990s, use of the site rapidly decreased. The site was largely inactive by mid-1996, and operations altogether were mothballed in early 1997.

A 10,000-gallon gasoline underground tank was installed in the northeast corner of the site in 1972. It was later decommissioned in 1989. In 1995, Georgia-Pacific replaced a 10,000-gallon diesel fuel UST after 20 years of service with a 15,000-gallon diesel AST in the northwest corner of the site. Four other 500-gallon ASTs were installed in the northwest corner as well (date unknown). A 5,000-gallon diesel fuel UST was installed in the southwest corner of the site in 1975. It was later decommissioned in 1988.

In the early 1970s, a fuel unloading facility was constructed at the dock to transfer fuel from the barges to storage tanks at the PGE Harborton substation. A pipeline was placed underground from the dock to the PGE site although the files reviewed for this report did not show its location. CH2M Hill (2000a) indicated that the pipeline was only used two or three times.

The site was inactive between August 1996 and 1999. Morse Brothers, Inc., a commercial sand and gravel supplier and aggregate mining company, purchased the site from Georgia-Pacific in 1999 and currently owns the site (CH2M HILL 2000a, DEQ 1999a, 2004).

8. CURRENT AND HISTORIC SOURCES AND COPCS

The understanding of historic and current potential upland and overwater sources at the site is summarized in Table 1. The following sections provide a brief overview of the potential sources and COPCs at the site requiring additional discussion.

8.1. Uplands

The following is a summary of the sources that were determined to be potential sources of releases to sediment as evaluated in the *Supplemental Preliminary Assessment Report for the Linnton Site* (CH2M HILL 2000a). The locations of these sources are shown on Supplemental Figure 3-3 from CH2M HILL (2000a):

Potential Onsite Sources

- **Gasoline UST Soil Remediation Pile:** Soil from a gasoline UST excavation was stockpiled in order to aerate and naturally degrade. There are no records of stormwater contamination from the pile.
- **Bulk Petroleum Storage Area:** The bulk petroleum storage area consists of four ASTs located in the northwestern portion of the site. Three 500-gallon tanks contain hydraulic oil, transmission oil, and motor oil within a bermed storage area. A 500-gallon waste oil tank is located outside the bermed area. In addition, a 15,000-gallon diesel AST was installed in this area to replace the 10,000-gallon diesel UST that was removed. There are no documented releases from the ASTs.
- **Historic Kingsley Lumber Creosote Wood Treating Plant:** Kingsley Lumber operated a sawmill and creosote plant in the southeastern corner of the site. It is not known what specific operations were conducted; however, CH2M HILL (2000a) indicated that Sanborn maps available for the site showed a creosote pole treating plant.
- **Georgia-Pacific Dock:** The dock was historically used to load chips for export. There were no maintenance or ship-refueling capabilities at the dock. In the mid-1970s, a small number of diesel fuel transfers were performed at the dock. Fuel was transferred from barges to storage tanks at the PGE Harborton substation via underground pipeline.

Potential Offsite Sources

- **ACF Industries:** Prior to development of the Georgia-Pacific site, wastewater from the ACF site collected in the swampy area in the northwest portion of the Georgia-Pacific site and was allowed to evaporate or infiltrate into the ground. After development of the Georgia-Pacific site, a 30-inch stormwater drain line carried runoff from the Georgia-Pacific and ACF sites, as well as from the Portland hills, to the river via Outfall 1. DEQ (1999c) noted that sediment contamination in the river (sample SD005) is similar in character to contaminants that were known to be, or suspected of being, present on the ACF property.

COPCs for the potential source areas include oil and grease, PAHs, BTEX compounds, waste motor oil, diesel, ablative paint compounds (lead and TBT), and wood-treating compounds (PCP and arsenic).

8.2. Overwater Activities

☒ Yes ☐ No

Georgia-Pacific Dock: The dock was constructed in 1971 to load deep-water vessels with wood chips for export. The Georgia-Pacific site dock was dredged in 1988 for maintenance purposes, and thus sediments impacted from any incidental releases would have been removed (CH2M HILL 2000a). There were no reported releases aside from a spill of approximately 4 ounces of diesel fuel from a transfer hose in 1976 (see Section 8.3). There is no information available concerning current rock loading and unloading activities.

Information about the owner having and exercising a statutory right to an overwater facility was not found in Oregon Department of State Lands files.

8.3. Spills

Known or documented spills at the Georgia-Pacific site were obtained either from DEQ's Emergency Response Information System (ERIS) database for the period of 1995 to 2004, from oil and chemical spills recorded from 1982 to 2003 by the U.S. Coast Guard and the National Response Center's centralized federal database [see Appendix E of the Portland Harbor Work Plan (Integral et al. 2004)], from facility-specific technical reports (CH2M HILL 2000a), or from DEQ correspondence. These spills are summarized below.

Date	Material(s) Released	Volume Spilled (gallons)	Spill Surface (gravel, asphalt, sewer)	Action Taken (yes/no)
4/76	Diesel fuel	~0.06 gallons (4 ounces)	From fuel transfer hose at dock	Not reported

9. PHYSICAL SITE SETTING

In 1999, a Phase II environmental site assessment (ESA) was conducted at the site, which included the completion of seven probe borings and four monitoring wells; however, a copy of this report was not available in the DEQ file for review (Not seen, as cited in CH2M Hill 2000a). The Supplemental Preliminary Assessment Report for the Georgia-Pacific Site (CH2M HILL 2000a) refers to the Phase II ESA, but does not include geologic/hydrogeologic data collected during that investigation.

9.1. Geology

No site-specific geologic information was available in the DEQ file for the site.

9.2. Hydrogeology

No site-specific hydrogeologic information was available in the DEQ file for this site.

10. NATURE AND EXTENT (*Current Understanding*)

The current understanding of the nature and extent of contamination for the uplands portions of the site is summarized in this section. When no data exist for a specific medium, a notation is made.

10.1. Soil

10.1.1. Upland Soil Investigations

☒ Yes ☐ No

Soil samples were collected during the removal of the following gasoline and diesel USTs located at the site (CH2M HILL 2000a):

- **Southern Diesel Fuel UST:** A 5,000-gallon diesel fuel UST was removed in 1988. No soil contamination was detected during decommissioning sampling. A monitoring well was installed downgradient of the former UST location and a soil sample was collected at the soil/groundwater interface. Neither diesel nor lube oil was detected in the sample.
- **Gasoline UST:** A 10,000-gallon gasoline UST was removed from the northeastern corner of the facility in 1989. A sample collected from the soil excavated during the UST removal contained 900 ppm TPH, but no detectable gasoline or BTEX. TPH was not detected in two samples collected from the bottom of the tank excavation at 10 and 12 feet bgs. A Geoprobe™ boring was installed downgradient of the former UST location during the Phase II ESA. A soil sample was collected from this boring at the soil/groundwater interface, 11.9 bgs, and analyzed for diesel and lube oil. Both analytes were not detected.
- **Northern Diesel Fuel UST:** In 1995, Georgia-Pacific replaced a 20-year old, 10,000-gallon diesel fuel UST with a diesel fuel AST. A sample of the excavated soils contained 3,160 ppm TPH, but no detectable gasoline or heavier oils. Two confirmation soil samples collected at 12 feet bgs contained 21 ppm and less than 20 ppm TPH, respectively. Two soil borings, E-5-Lin and E-9-Lin, were advanced near the location of this former UST during the 1999 Phase II ESA. Soil samples were collected at the soil/groundwater interface. Diesel was detected

at the detection limit of 19 ppm in the sample nearest the former tank location, and lube oil was not detected in either sample.

10.1.2. Riverbank Samples

☐ Yes ☒ No

Available records indicate that no riverbank investigations have been conducted at the site.

10.1.3. Summary

Soil samples were collected in the excavation area of the three USTs that were removed. Soil borings were advanced at all three locations, and soil samples were collected at the soil/groundwater interface. Diesel was detected at the detection limit in the sample nearest the northern diesel fuel UST. Soil samples from the gasoline and northern diesel fuel UST contained TPH but no detectable BTEX. Surface soil samples were not collected; however, because most of the site is covered with impervious surfaces, overland transport is expected to be minimal.

10.2. Groundwater

10.2.1. Groundwater Investigations

☒ Yes ☐ No

In 1999, a Phase II ESA was conducted at the site and included groundwater investigation activities; however, a copy of this report was not available in the DEQ file for review. The Supplemental Preliminary Assessment for the Linnton Site (CH2M HILL 2000a) includes minimal information from the Phase II ESA report with respect to water quality results and the locations of the borings and wells. An RI report completed at the ACF site (RETEC 2002), located west-southwest of the Georgia Pacific site, includes a brief summary of the water quality data collected during the 1999 Phase II ESA. The following assessment of the nature and extent of impacted groundwater was based on information in these available reports and DEQ correspondence.

10.2.2. NAPL (Historic & Current)

☐ Yes ☒ No

Available records indicate no evidence of NAPL at the site.

10.2.3. Dissolved Contaminant Plumes

☒ Yes ☐ No

According to the Supplemental Preliminary Assessment (CH2M HILL 2000a), a groundwater sample was collected from monitoring well MW-2 located downgradient from the historic wood treating area. The sample was analyzed for TPH-Dx, VOCs, and SVOCs. No diesel or lube oil was detected in the sample. SVOCs were not detected in the sample above the method detection limit, which ranged from 10 to 25 µg/L. The report states that "VOCs were detected at concentrations above the method detection limit, which ranged from 1 µg/L to 50 µg/L." It is not clear whether this range applies to the concentrations of detected constituents or the detection limits. Specific VOC constituents were not identified.

According to the ACF RI report (RETEC 2002), two monitoring wells (MW-1 and MW-3) were installed on the former Georgia Pacific property immediately downgradient from the ACF site. No petroleum, VOCs, or SVOCs were detected in the groundwater samples. Monitoring well MW-4 was installed on former Georgia Pacific property adjacent to the LOFTG site to assess potential groundwater contamination in that area. Petroleum was detected in the groundwater sample collected from MW-4; however, VOCs and SVOCs were not detected in the sample.

Plume Characterization Status ☐ Complete ☒ Incomplete

In a letter to Georgia Pacific, the DEQ (2002b) requested an evaluation of groundwater

near the historic wood treatment facility. The DEQ file indicates that no additional investigation of groundwater was performed in this area.

Plume Extent

Insufficient information is available in the DEQ files to assess the extent of the plumes, if any, at the site.

Min/Max Detections (Current situation)

Specific concentration levels from groundwater investigation activities were not available in the DEQ file.

Current Plume Data

Insufficient information is available in the DEQ files concerning possible plumes at the site.

Preferential Pathways

Based on available information, no preferential pathways were identified at the site.

Downgradient Plume Monitoring Points (min/max detections)

Plume monitoring data have not been collected.

Visual Seep Sample Data

☐ Yes ☒ No

No seeps have been identified at the site (GSI 2003).

Nearshore Porewater Data

No porewater data have been collected at the site.

Groundwater Plume Temporal Trend

Insufficient data are available to assess plume distributions, if any, over time.

10.2.4. Summary

Four shallow monitoring wells have been installed at the site to characterize groundwater. Available DEQ records include minimal information regarding groundwater quality at the site. However, the DEQ (2002a) has indicated that the site does not appear to be a current source of Willamette River sediment contamination.

10.3. Surface Water

10.3.1. Surface Water Investigation

☐ Yes ☒ No

10.3.2. General or Individual Stormwater Permit [Current or Past]

☒ Yes ☐ No

Permit Type	File Number	Start Date	Outfalls	Volumes	Parameters/Frequency
GEN12Z	32876-17443	4/3/01	Outfall 3 (CH2M HILL 2000a)	?	Standard ¹ /twice yearly
GEN12Z	32876-10301	10/22/97	Inactive (terminated)	?	Standard ¹ /twice yearly
GEN12W	32876-10302	10/23/92	Inactive	?	pH, TSS, BOD, COD, TOC, O&G

GEN01	32876-10303	12/27/82	Outfall 3 (inactive-terminated)	?	Flow rate, temperature, and pH
-------	-------------	----------	------------------------------------	---	--------------------------------

¹ Standard GEN12Z permit requirements include pH, oil and grease, total suspended solids, copper, lead, and zinc. *E. coli* may also be required.

The locations of these outfalls are shown on Supplemental Figure 3-3 from CH2M HILL (2000a), and drainage areas are shown on Supplemental Figure 4 from ESA (2001). It should be noted that the outfall numbering used by ESA (2001) is the reverse of those used by CH2M HILL (2000a). The following description of outfalls follows the CH2M HILL (2000a, 2000c) nomenclature, although information was compiled from both ESA (2001) and CH2M HILL (2000c):

- **Outfall 1/WR-153** is a 30-inch outfall located at the northern end of the site. The outfall conveys surface runoff from the west hills (Forest Park), the adjacent former ACF Industries site, and onsite drainage from areas 2 (2 acres, 30% impervious), 3 (1.5 acres, 100% impervious), and 4 (0.75 acres, 100% impervious). A 15,000-gallon AST occurs in area 2, the truck scale occurs in area 3, and a maintenance shop occurs in area 4.
- **Outfall 2/WR-239** is a 12-inch outfall that collects stormwater from area 5 (0.75 acres; 100% impervious) near the site laboratory building. This outfall discharges to the riprap bank just below the existing grade of the terminal.
- **Outfall 3/WR-238** is a 12-inch outfall that receives stormwater runoff from the former chip storage area and drainage from the subsurface conveyor pit locations of area 1 (16 acres; 98% impervious). Stormwater is collected in a trench that runs north and south. This outfall discharges to the riprap bank just below the existing grade of the terminal.
- **Outfall 4/WR-237** is a 12-inch outfall that also receives stormwater runoff from the former chip storage area, the former Kingsley Lumber Wood Treating Plant, and drainage from the subsurface conveyor pit locations of area 1 (16 acres; 98% impervious). Stormwater is collected in a trench that runs north and south. This outfall discharges to the riprap bank just below the existing grade of the terminal in the southeast corner.

Do other non-stormwater wastes discharge to the system? ☒ Yes ☐ No

When the former ACF Industries facility was in operation (operations ceased in 1980), wastewater from pressure-washing activities was discharged to an unlined surface impoundment in the northeast corner of the site. As the impoundment filled, the pond would extend to the southeast to a culvert located beneath the railroad tracks and wastewater would discharge to a swampy area on the Georgia-Pacific site. After development of the Georgia-Pacific site, a 30-inch stormwater drainline was installed, and now the ponded water passes through the culvert under the tracks and enters the Georgia-Pacific storm sewer (CH2M HILL 2000a).

10.3.3. Stormwater Data ☐ Yes ☒ No

10.3.4. Catch Basin Solids Data ☐ Yes ☒ No

10.3.5. Wastewater Permit ☐ Yes ☒ No

Permit Type	Permit No.	Start Date	Outfalls	Volumes	Parameters/Frequency
GEN01	32876-10303 (inactive-terminated)	12/27/82	Outfall 3	?	Flow rate, temperature, and pH

10.3.6. Wastewater Data

☐ Yes ☒ No

10.3.7. Summary

Stormwater is currently discharged from four outfall points; samples are collected from Outfall 3/WR-238 (nomenclature from CH2M HILL 2000a) in compliance with the facility's NPDES 12Z permit. There is no wastewater currently generated at the site; however, a permit for the discharge of cooling water was in place beginning in 1982. The wastewater permit has since been terminated. In addition, excess wastewater generated at ACF Industries historically drained into a swampy area located on the Georgia-Pacific site. Now, ponded water at the ACF Industries site enters the Georgia-Pacific stormwater system site via culvert and discharges to the river through Outfall 1/WR-153.

10.4. Sediment

10.4.1. River Sediment Data

☒ Yes ☐ No

River Character and Dredging History

Steep slopes extend from the site shoreline to just east of the Georgia-Pacific dock adjacent to the site. The bottom then tapers off just east of the dock, and the slope is gentle until reaching the main river channel approximately 500 feet from the shoreline. The area downstream of the site is a shoal in which water depths were too shallow for a prop boat to navigate during low water.

CH2M HILL (2000c) observed that during higher volume flows, a large back-eddy exists downstream of the site. The back-eddy flows countercurrent to the main downstream flow, and re-enters the main flow in the general vicinity of the downstream end of the dock and Outfall 1.

In 1971, the Willamette River sediment was dredged in the area adjacent to the Linnton site for the purpose of constructing a dock, as shown in Supplemental Figure 2-1 from CH2M HILL (2000c). Approximately 474,000 cubic yards of material were removed, and river bottom levels were lowered by over 30 feet in some areas. A portion of the area was re-dredged in 1985 as part of the maintenance dredging performed near the dock. Bathymetric surveys were conducted in 1970 and 2000. The historical data were compared to the current data to determine the sediment depositional characteristics adjacent to the site. As shown in Supplemental Figures 3-1 through 3-4 from CH2M HILL (2000c), a significant amount of sediment deposition has occurred in the area adjacent to the Linnton site. Approximately 10 to 15 feet of sediment has been redeposited in areas near the Linnton dock since the 1971 dredging.

Sediment Sampling Data

One surface sediment and 11 subsurface sediment samples have been collected off the Georgia-Pacific property in association two surveys (Figure 1). Roy F. Weston (EPA contractor) collected one surface sediment sample in 1997 (Weston 1998), and CH2M

HILL collected core samples for Georgia-Pacific on May 16-17, 2000 as part of the Expanded Preliminary Assessment (XPA) for the Linnton Site (CH2M HILL 2000c). Sediment chemistry data are summarized in Table 2.

Weston's (1998) surface sediment sample was collected on the downstream end of the Georgia-Pacific dock. DEQ (2004) noted "elevated concentrations of thallium, PAHs, arsenic and iron in river sediments at [this location], and elevated concentrations of thallium, PAHs, mercury, and pentachlorophenol in sediments collected about 340 feet farther downstream" of the site.

As part of CH2M HILL's (2000c) study, two cores were collected from each location shown in Supplemental Figure 2-1 of CH2M HILL (2000c) and composited. Sediment characteristics between locations were very similar, with the exception of two or three samples downstream of Outfall 1/WR-153. In general, sediment was a silty material with various colorations of gray, brown, and green, with a layer approximately 1 to 2 centimeters (cm) thick of a lighter brown silt on top. The general area downstream of Outfall 1/WR-153 appeared to differ from other areas due to different depositional/scouring characteristics. Both samples upstream of the site and the sample at the downstream end of the dock had slight petroleum-like organic odors.

Based on the results from the XPA (CH2M HILL 2000c), DEQ (2004) concluded that while petroleum-contaminated sediment was observed adjacent to the subject site in the Willamette River, the subject site does not appear to be a current source of such contamination and that source-control measures are not necessary at this time.

10.4.2. Summary

See Final CSM Update.

11. CLEANUP HISTORY AND SOURCE CONTROL MEASURES

11.1. *Soil Cleanup/Source Control*

In 1988, a 5,000-gallon diesel fuel UST was removed. No soil contamination was discovered during decommissioning.

A 10,000-gallon gasoline UST, formerly used to store diesel, was removed in 1989 and approximately 10 cy of soil was removed during tank removal. The excavated soil contained 900 ppm TPH, but gasoline and BTEX were non-detect. TPH was not detected in the bottom of the excavation, and the soil/groundwater interface sample collected downgradient was non-detect for diesel and lube oil compounds.

In 1995, a 10,000-gallon diesel fuel UST was replaced with an AST and approximately 69 cy of soil was removed during the UST removal. The excavated soil contained 3,160 ppm TPH, but no detectable gasoline or heavier oils. Confirmation samples collected at the bottom of the tank excavation contained 21 ppm and 20 ppm TPH. No groundwater was encountered. Two soil borings were advanced near the location of the UST, and soil samples were collected at the soil/groundwater interface. Lube oil was not detected and diesel was only detected at the detection limit in the boring nearest the tank removal area (CH2M HILL 2000c).

11.2. *Groundwater Cleanup/Source Control*

No groundwater source control measures have been conducted at the site.

11.3. Other

Sediments have been dredged at various times since at least 1971. Details are provided in Section 10.4.

11.4. Potential for Recontamination from Upland Sources

See Final CSM Update.

12. BIBLIOGRAPHY / INFORMATION SOURCES

References cited:

CH2M HILL. 1999. Preliminary Assessment for the Linnton Fiber Terminal. Prepared for Georgia-Pacific West, Inc. CH2M HILL, Portland, OR.

CH2M HILL. 2000a. Supplemental Preliminary Assessment for the Linnton Site. Prepared for Georgia-Pacific West, Inc. CH2M HILL, Portland, OR.

CH2M HILL. 2000b. Linnton Site Sediment Reconnaissance Survey – Results and Revised Sample Locations. Prepared for Georgia-Pacific. CH2M HILL, Portland, OR.

CH2M HILL. 2000c. Expanded Preliminary Assessment for the Linnton Site. Prepared for Georgia-Pacific. CH2M HILL, Portland, OR.

DEQ. 1999a. DEQ Strategy Recommendation – Georgia-Pacific – Linnton Fiber Terminal. September 21, 1999. Site Assessment Program, Oregon Department of Environmental Quality, Portland, OR.

DEQ. 1999b. Voluntary Cleanup Letter Agreement. October 1, 1999. Waste Management and Cleanup Division, Oregon Department of Environmental Quality, Portland, OR.

DEQ. 1999c. DEQ Strategy Recommendation – ACF Industries. September 27, 1999. Site Assessment Program, Oregon Department of Environmental Quality, Portland, OR.

DEQ. 2002a. DEQ Facility Summary Report. DEQ Environmental Cleanup Site (ECSI) Database. Accessed June 2, 2004. www.deq.12.deq.state.or.us/fp20/FPDetail.aspx?SiteID=1385.

DEQ. 2002b. Letter from the DEQ to Georgia Pacific Corporation regarding the Expanded Preliminary Assessment, dated May 8, 2002. Oregon Department of Environmental Quality, Portland, OR.

DEQ. 2004. DEQ Site Summary Report – Details for Site ID 2370. DEQ Environmental Cleanup Site (ECSI) Database. Accessed May 28 2004. www.deq.state.or.us/wmc/ecsi/ecsidetail.asp?seqnbr=2370.

EDR. 2002. EDR Environmental Atlas, Portland Harbor, Multnomah. OR. Environmental Data Resources, Southport, CT.

ESA. 2001. Storm Water Pollution Control Plan. Prepared for Morse Brothers, Inc. Environmental Science Associates, Inc., Eugene, OR.

GSI. 2003. Technical Memorandum: Results of Seep Reconnaissance Survey, River Mile 22-10.5, Lower Willamette River. Groundwater Solutions, Inc., Portland, OR.

Integral and DEA. 2004. Lower Willamette River February 2004 Multibeam Bathymetric Survey Report. Draft. Prepared for Lower Willamette Group, Portland, OR. Integral Consulting, Inc. Mercer Island, WA,

and David Evans and Associates, Inc., Portland, OR.

Integral, Windward, Kennedy/Jenks, Anchor Environmental, and Groundwater Solutions. 2004. Portland Harbor RI/FS Programmatic Work Plan. Prepared for the Lower Willamette Group, Portland, OR. Integral Consulting, Inc., Mercer Island, WA.

RETEC. 2002. Remedial Investigation Report, ACF Industries Property, 12160 NW St. Helens Rd., Portland. The RETEC Group, Seattle, WA.

Weston. 1998. Portland Harbor Sediment Investigation Report. Prepared for U.S. Environmental Protection Agency. Roy F. Weston, Inc., Portland, OR.

Other relevant references/information sources:

Figures:

Figure 1. Site Features

Tables:

Table 1. Potential Sources and Transport Pathways Assessment

Table 2. Queried Sediment Chemistry Data.

Supplemental Figures:

Figure 2-1. Linnton Site Bathymetry, Sediment sample Locations and Historical Dredging (CH2M HILL 2000c)

Figure 3-3. Source/Pathway Locations (CH2M HILL 2000a)

Figure 4. Site Storm Water Drainage/Outfall Map (ESA 2001)

Figure 3-1. Plan View Cross Sections A-A', B-B', and C-C' (CH2M HILL 2000c)

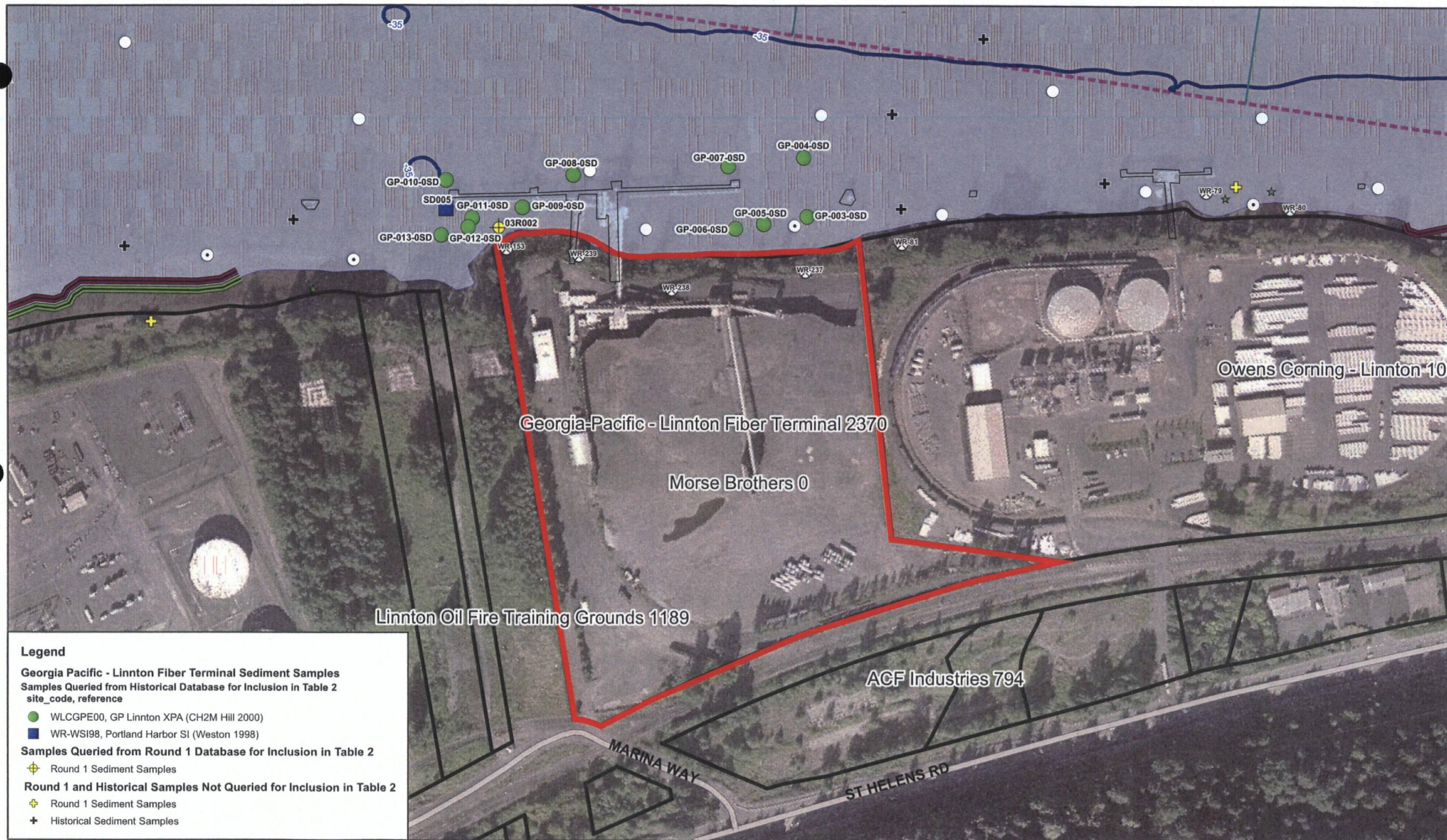
Figure 3-2. Cross Section View A-A' (CH2M HILL 2000c)

Figure 3-3. Cross Section View B-B' (CH2M HILL 2000c)

Figure 3-4. Cross Section View C-C' (CH2M HILL 2000c)

FIGURES

Figure 1. Site Features



TABLES

Table 1. Potential Sources and Transport Pathways Assessment
Table 2. Queried Sediment Chemistry Data.

DO NOT QUOTE OR CITE.

This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.

Georgia-Pacific - Linnton (Morse Bros) #2370

Table 1. Potential Sources and Transport Pathways Assessment

Last Updated: March 4, 2005

Potential Sources	Media Impacted					COIs																	Potential Complete Pathway								
Description of Potential Source	Surface Soil	Subsurface Soil	Groundwater	Catch Basin Solids	River Sediment	TPH			VOCs			SVOCs	PAHs	Phthalates	Phenolics	Metals	PCBs	Herbicides and Pesticides	Dioxins/Furans	Butyltins	Oakite	Grease	Oils	Creosote, Wood Treating Chemicals	Overland Transport	Groundwater	Direct Discharge - Overwater	Direct Discharge - Storm/Wastewater	Riverbank Erosion		
						Gasoline-Range	Diesel - Range	Heavier - Range	Petroleum-Related (e.g. BTEX)	VOCs	Chlorinated VOCs																				
Upland Areas																															
Gasoline Fuel UST & Soil Remediation Pile	✓	✓				✓	✓		✓				✓												✓				✓		
Bulk Petroleum Storage Area - ASTs	?						✓	✓																	✓				✓		
Former ACF Site	✓	✓											✓												✓				✓		
Former Kingsley Lumber Wood Treating Plant	✓	✓	✓		✓							?	✓			?									✓	✓			✓		
Former Linnton Oil Fire Training Ground (LOFTG)		✓	✓																						✓		✓				
Overwater Areas																															
Georgia-Pacific Dock (docked ships, former fuel unloading)					✓		✓									✓				✓		✓	✓					✓			
Other Areas/Other Issues																															

Notes:

¹ All information provided in this table is referenced in the site summaries. If information is not available or inconclusive, a ? may be used, as appropriate. No new information is provided in this table.

✓ = Source, COI are present or current or historic pathway is determined to be complete or potentially complete.

? = There is not enough information to determine if source or COI is present or if pathway is complete.

Blank = Source, COI and historic and current pathways have been investigated and shown to be not present or incomplete.

UST = Underground storage tank

AST = Above-ground storage tank

TPH = Total petroleum hydrocarbons

VOCs = Volatile organic compounds

SVOCs = Semivolatile organic compounds

PAHs = Polycyclic aromatic hydrocarbons

BTEX = Benzene, toluene, ethylbenzene, and xylenes

PCBs = Polychlorinated biphenols

Table 2. Georgia-Pacific Linnton Site Querried Sediment Chemistry Data.

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Aroclor 1016 (ug/kg)	1	0	0						3.9 U	3.9 U	3.9	3.9 U	3.9 U
surface	Aroclor 1242 (ug/kg)	1	0	0						3.9 U	3.9 U	3.9	3.9 U	3.9 U
surface	Aroclor 1248 (ug/kg)	1	0	0						6.4 U	6.4 U	6.4	6.4 U	6.4 U
surface	Aroclor 1254 (ug/kg)	1	0	0						17 U	17 U	17	17 U	17 U
surface	Aroclor 1260 (ug/kg)	1	0	0						26 U	26 U	26	26 U	26 U
surface	Aroclor 1221 (ug/kg)	1	0	0						7.8 U	7.8 U	7.8	7.8 U	7.8 U
surface	Aroclor 1232 (ug/kg)	1	0	0						3.9 U	3.9 U	3.9	3.9 U	3.9 U
surface	Polychlorinated biphenyls (ug/kg)	1	0	0						26 U	26 U	26	26 U	26 U
surface	Total solids (percent)	1	1	100	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8	50.8
surface	Total organic carbon (percent)	13	13	100	1	3.02	1.95	1.89	2.82	1	3.02	1.95	1.89	2.82
surface	< 0.075 mm (percent)	11	11	100	64.2	95.6	84.3	86.9	92	64.2	95.6	84.3	86.9	92
surface	0.075 to 0.85 mm (percent)	11	11	100	4.3	34.4	15.2	12.9	30.5	4.3	34.4	15.2	12.9	30.5
surface	Gravel (percent)	2	2	100	0.5	2.87	1.69	0.5	0.5	0.5	2.87	1.69	0.5	0.5
surface	Sand (percent)	1	1	100	45.71	45.71	45.7	45.71	45.71	45.71	45.71	45.7	45.71	45.71
surface	Very coarse sand (percent)	1	1	100	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
surface	Coarse sand (percent)	1	1	100	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09	1.09
surface	Medium sand (percent)	1	1	100	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81	2.81
surface	Fine sand (percent)	1	1	100	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15	8.15
surface	Very fine sand (percent)	1	1	100	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4	22.4
surface	Fines (percent)	1	1	100	51.42	51.42	51.4	51.42	51.42	51.42	51.42	51.4	51.42	51.42
surface	Silt (percent)	1	1	100	42.71	42.71	42.7	42.71	42.71	42.71	42.71	42.7	42.71	42.71
surface	Coarse silt (percent)	1	1	100	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
surface	Medium silt (percent)	1	1	100	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
surface	Fine silt (percent)	1	1	100	9.26	9.26	9.26	9.26	9.26	9.26	9.26	9.26	9.26	9.26
surface	Very fine silt (percent)	1	1	100	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97	4.97
surface	Clay (percent)	1	1	100	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71	8.71
surface	8-9 Phi clay (percent)	1	1	100	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99	2.99
surface	9-10 Phi clay (percent)	1	1	100	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61
surface	>10 Phi clay (percent)	1	1	100	4.09	4.09	4.09	4.09	4.09	4.09	4.09	4.09	4.09	4.09
surface	Dalapon (ug/kg)	1	0	0						16 U	16 U	16	16 U	16 U
surface	Dicamba (ug/kg)	1	0	0						3.3 U	3.3 U	3.3	3.3 U	3.3 U
surface	MCPA (ug/kg)	1	0	0						12000 U	12000 U	12000	12000 U	12000 U
surface	Dichloroprop (ug/kg)	1	0	0						6.5 U	6.5 U	6.5	6.5 U	6.5 U
surface	2,4-D (ug/kg)	1	0	0						6.5 U	6.5 U	6.5	6.5 U	6.5 U
surface	Silvex (ug/kg)	1	0	0						1.6 U	1.6 U	1.6	1.6 U	1.6 U
surface	2,4,5-T (ug/kg)	1	0	0						1.6 U	1.6 U	1.6	1.6 U	1.6 U
surface	2,4-DB (ug/kg)	1	0	0						33 U	33 U	33	33 U	33 U
surface	Dinoseb (ug/kg)	1	0	0						3.3 U	3.3 U	3.3	3.3 U	3.3 U
surface	MCPD (ug/kg)	1	0	0						4500 U	4500 U	4500	4500 U	4500 U

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	%	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Aluminum (mg/kg)	13	13	100	27400	41900	32700	32200	36600	27400	41900	32700	32200	36600
surface	Antimony (mg/kg)	12	0	0						0.72 U	5 UJ	1.18	0.83 U	0.98 U
surface	Arsenic (mg/kg)	13	13	100	4	21.6	10.6	9.8	15.8	4	21.6	10.6	9.8	15.8
surface	Cadmium (mg/kg)	13	4	30.8	0.21	1.3	0.688	0.4	0.84	0.21	1.3	0.797	0.84	0.98 U
surface	Chromium (mg/kg)	13	13	100	30.1	44.7	35.7	35.8	39.5	30.1	44.7	35.7	35.8	39.5
surface	Copper (mg/kg)	13	13	100	32.3	47.4	39.2	39.3	43.7	32.3	47.4	39.2	39.3	43.7
surface	Lead (mg/kg)	13	13	100	7.7	28.7	14.7	14	16.8	7.7	28.7	14.7	14	16.8
surface	Manganese (mg/kg)	12	12	100	503	725	601	592	665	503	725	601	592	665
surface	Mercury (mg/kg)	13	12	92.3	0.07 J	0.36	0.117	0.09	0.18	0.07 J	0.36	0.115	0.09	0.18
surface	Nickel (mg/kg)	13	13	100	26	34.5	28.8	28.8	31.8	26	34.5	28.8	28.8	31.8
surface	Selenium (mg/kg)	13	3	23.1	0.9	11	4.29	0.98	0.98	0.4 UJ	11	1.54	0.76 U	0.98
surface	Silver (mg/kg)	13	2	15.4	0.05 J	0.7	0.375	0.05 J	0.05 J	0.05 J	2 U	1.48	1.6 U	1.9 U
surface	Thallium (mg/kg)	1	1	100	23	23	23	23	23	23	23	23	23	23
surface	Zinc (mg/kg)	13	13	100	88.1	151	112	104	140	88.1	151	112	104	140
surface	Barium (mg/kg)	12	12	100	150	196	171	172	194	150	196	171	172	194
surface	Beryllium (mg/kg)	12	12	100	0.54	1.1	0.828	0.82	0.96	0.54	1.1	0.828	0.82	0.96
surface	Calcium (mg/kg)	1	1	100	7600	7600	7600	7600	7600	7600	7600	7600	7600	7600
surface	Cobalt (mg/kg)	12	12	100	15	26.2	18.7	17.9	20.7	15	26.2	18.7	17.9	20.7
surface	Iron (mg/kg)	12	12	100	27600	47600	34300	33000	41600	27600	47600	34300	33000	41600
surface	Magnesium (mg/kg)	12	12	100	5830	7010	6380	6370	6910	5830	7010	6380	6370	6910
surface	Potassium (mg/kg)	1	1	100	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
surface	Sodium (mg/kg)	1	1	100	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040
surface	Tin (mg/kg)	11	0	0						3.6 U	4.9 U	4.16	4.1 U	4.7 U
surface	Titanium (mg/kg)	11	11	100	608	1880	1060	1030	1160	608	1880	1060	1030	1160
surface	Vanadium (mg/kg)	12	12	100	78.2	109	88.9	86	98.5	78.2	109	88.9	86	98.5
surface	2-Methylnaphthalene (ug/kg)	2	2	100	74	200	137	74	74	74	200	137	74	74
surface	Acenaphthene (ug/kg)	13	10	76.9	2.9	411	90	16	194	2.9	411	76.9	22 U	194
surface	Acenaphthylene (ug/kg)	13	10	76.9	6.1	153	38.9	18	63	1.7 U	153	36.2	21	63
surface	Anthracene (ug/kg)	13	12	92.3	2.4	613	88.4	25	134	2.4	613	86	33	134
surface	Fluorene (ug/kg)	13	11	84.6	2.5	265	55.2	17	124	2.5	265	52.7	20 U	124
surface	Naphthalene (ug/kg)	13	12	92.3	5.4	358	98.4	17	303	5.4	358	92.5	22 U	303
surface	Phenanthrene (ug/kg)	13	13	100	12	3040	458	120	1120	12	3040	458	120	1120
surface	Low Molecular Weight PAH (ug/kg)	13	13	100	25.2 A	4785 A	776	207 A	1992 A	25.2 A	4785 A	776	207 A	1992 A
surface	Dibenz(a,h)anthracene (ug/kg)	13	10	76.9	5.4	100	28.5	12	60 J	1.7 U	141 U	34.4	18	100
surface	Benz(a)anthracene (ug/kg)	13	13	100	9.2	1680	287	124	480	9.2	1680	287	124	480
surface	Benzo(a)pyrene (ug/kg)	13	13	100	10	1890	346	165	780	10	1890	346	165	780
surface	Benzo(b)fluoranthene (ug/kg)	13	13	100	13	1960	373	215 E	500	13	1960	373	215 E	500
surface	Benzo(g,h,i)perylene (ug/kg)	13	13	100	7.1	1610	281	133	460	7.1	1610	281	133	460
surface	Benzo(k)fluoranthene (ug/kg)	13	13	100	3.3	520	130	52	459	3.3	520	130	52	459
surface	Chrysene (ug/kg)	13	13	100	8.5	1360	264	95	620	8.5	1360	264	95	620
surface	Fluoranthene (ug/kg)	13	13	100	23	3850	634	226 E	1100	23	3850	634	226 E	1100

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	% Detected	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	Indeno(1,2,3-cd)pyrene (ug/kg)	13	13	100	5.3	1080	201	100	400	5.3	1080	201	100	400
surface	Pyrene (ug/kg)	13	13	100	20	4600	713	236 E	1300	20	4600	713	236 E	1300
surface	Benzo(b+k)fluoranthene (ug/kg)	12	12	100	16.3 A	2419 A	502	257 A	1020 A	16.3 A	2419 A	502	257 A	1020 A
surface	High Molecular Weight PAH (ug/kg)	13	13	100	99.4 A	18489 A	3250	1346 A	6260 A	99.4 A	18489 A	3250	1346 A	6260 A
surface	Polycyclic Aromatic Hydrocarbons (ug/kg)	12	12	100	124.6 A	23274 A	4100	1471 A	7473 A	124.6 A	23274 A	4100	1471 A	7473 A
surface	C1-Dibenzothiophene (ug/kg)	11	8	72.7	2.1	247	60.9	5.8	126	1.7 U	247	48.3	5.8	126
surface	C1-Chrysene (ug/kg)	11	11	100	3.9	779	129	56	174	3.9	779	129	56	174
surface	C1-Fluorene (ug/kg)	11	8	72.7	3.3	287	56.9	9.2	90	1.7 U	287	45.3	9.4	90
surface	C1-Naphthalene (ug/kg)	11	8	72.7	3.5	327	58.9	6.4	94	1.7 U	327	46.8	7.7	94
surface	C1-Fluoranthene/pyrene (ug/kg)	11	11	100	7.9	1850	287	95	442	7.9	1850	287	95	442
surface	C1-Phenanthrene/anthracene (ug/kg)	11	11	100	6.7	1820	270	55	516	6.7	1820	270	55	516
surface	C2-Dibenzothiophene (ug/kg)	11	9	81.8	5.5	515	128	14	409	1.7 U	515	106	14	409
surface	C2-Chrysene (ug/kg)	11	11	100	2	393	71.8	31	128	2	393	71.8	31	128
surface	C2-Fluorene (ug/kg)	11	8	72.7	3.8	366	75.7	8.8	101	1.7 U	366	59	12	101
surface	C2-Naphthalene (ug/kg)	11	9	81.8	2.4	1080	165	15	242	2.4	1080	139	16	242
surface	C2-Phenanthrene/anthracene (ug/kg)	11	11	100	5.3	1530	252	50	467	5.3	1530	252	50	467
surface	C3-Dibenzothiophene (ug/kg)	11	9	81.8	5.6	404	97.1	11	311	1.7 U	404	81.4	11	311
surface	C3-Chrysene (ug/kg)	11	9	81.8	5.5	176	41	13	84	1.7 U	176	35.5	13	84
surface	C3-Fluorene (ug/kg)	11	9	81.8	5.6	370	73.7	16	123	1.7 U	370	62.2	16	123
surface	C3-Naphthalene (ug/kg)	11	8	72.7	4.9	1240	219	12	285	1.7 U	1240	163	14	285
surface	C3-Phenanthrene/anthracene (ug/kg)	11	11	100	3.2	631	147	43	448	3.2	631	147	43	448
surface	C4-Dibenzothiophene (ug/kg)	11	6	54.5	4.9	232	45.8	5.6	20	1.7 U	232	42	6.8	141 U
surface	C4-Chrysene (ug/kg)	11	3	27.3	2	3.5	2.67	2.5	2.5	1.7 U	141 U	21	3.5	22 U
surface	C4-Fluorene (ug/kg)	11	4	36.4	4.3	38	22.6	13	35	1.7 U	141 U	25.5	13	38
surface	C4-Naphthalene (ug/kg)	11	8	72.7	4.3	835	149	9.7	162	1.7 U	835	112	11	162
surface	C4-Phenanthrene/anthracene (ug/kg)	11	8	72.7	2.7	201	45.3	7.9	106	1.7 U	201	47.7	11	141 U
surface	2,4'-DDD (ug/kg)	1	0	0						2.2 UJ	2.2 UJ	2.2	2.2 UJ	2.2 UJ
surface	2,4'-DDE (ug/kg)	1	0	0						3.6 U	3.6 U	3.6	3.6 U	3.6 U
surface	2,4'-DDT (ug/kg)	1	1	100	22	22	22	22	22	22	22	22	22	22
surface	4,4'-DDD (ug/kg)	1	1	100	10 J	10 J	10	10 J	10 J	10 J	10 J	10	10 J	10 J
surface	4,4'-DDE (ug/kg)	1	1	100	4.8 J	4.8 J	4.8	4.8 J	4.8 J	4.8 J	4.8 J	4.8	4.8 J	4.8 J
surface	4,4'-DDT (ug/kg)	1	1	100	210	210	210	210	210	210	210	210	210	210
surface	Total of 3 isomers: pp-DDT,-DDD,-DDE (ug/kg)	1	1	100	225 J	225 J	225	225 J	225 J	225 J	225 J	225	225 J	225 J
surface	Aldrin (ug/kg)	1	0	0						0.49 U	0.49 U	0.49	0.49 U	0.49 U
surface	alpha-Hexachlorocyclohexane (ug/kg)	1	0	0						0.2 U	0.2 U	0.2	0.2 U	0.2 U
surface	beta-Hexachlorocyclohexane (ug/kg)	1	0	0						0.89 U	0.89 U	0.89	0.89 U	0.89 U
surface	delta-Hexachlorocyclohexane (ug/kg)	1	0	0						0.2 UJ	0.2 UJ	0.2	0.2 UJ	0.2 UJ
surface	gamma-Hexachlorocyclohexane (ug/kg)	1	0	0						0.2 U	0.2 U	0.2	0.2 U	0.2 U
surface	cis-Chlordane (ug/kg)	1	0	0						0.4 U	0.4 U	0.4	0.4 U	0.4 U
surface	trans-Chlordane (ug/kg)	1	0	0						1.8 U	1.8 U	1.8	1.8 U	1.8 U
surface	Oxychlordane (ug/kg)	1	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	%	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	cis-Nonachlor (ug/kg)	1	0	0						1 U	1 U	1	1 U	1 U
surface	trans-Nonachlor (ug/kg)	1	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U
surface	Dieldrin (ug/kg)	1	0	0						0.35 U	0.35 U	0.35	0.35 U	0.35 U
surface	alpha-Endosulfan (ug/kg)	1	0	0						0.2 U	0.2 U	0.2	0.2 U	0.2 U
surface	beta-Endosulfan (ug/kg)	1	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U
surface	Endosulfan sulfate (ug/kg)	1	0	0						0.39 UJ	0.39 UJ	0.39	0.39 UJ	0.39 UJ
surface	Endrin (ug/kg)	1	0	0						0.39 U	0.39 U	0.39	0.39 U	0.39 U
surface	Endrin aldehyde (ug/kg)	1	0	0						0.62 U	0.62 U	0.62	0.62 U	0.62 U
surface	Endrin ketone (ug/kg)	1	0	0						0.73 UJ	0.73 UJ	0.73	0.73 UJ	0.73 UJ
surface	Heptachlor (ug/kg)	1	0	0						0.2 U	0.2 U	0.2	0.2 U	0.2 U
surface	Heptachlor epoxide (ug/kg)	1	0	0						0.2 U	0.2 U	0.2	0.2 U	0.2 U
surface	Methoxychlor (ug/kg)	1	0	0						2 U	2 U	2	2 U	2 U
surface	Mirex (ug/kg)	1	0	0						2.2 U	2.2 U	2.2	2.2 U	2.2 U
surface	Toxaphene (ug/kg)	1	0	0						20 U	20 U	20	20 U	20 U
surface	Diesel fuels (mg/kg)	11	11	100	21	262	86.5	69	113	21	262	86.5	69	113
surface	2,3,4,6-Tetrachlorophenol (ug/kg)	1	0	0						290 U	290 U	290	290 U	290 U
surface	2,4,5-Trichlorophenol (ug/kg)	13	0	0						14 U	290 U	45.4	20 U	96 U
surface	2,4,6-Trichlorophenol (ug/kg)	13	0	0						1.4 U	290 U	31.3	2 U	96 U
surface	2,4-Dichlorophenol (ug/kg)	2	0	0						58 U	170 U	114	58 U	58 U
surface	2,4-Dimethylphenol (ug/kg)	13	0	0						1.4 U	170 U	16.1	2 U	19 U
surface	2,4-Dinitrophenol (ug/kg)	2	0	0						190 UJ	580 U	385	190 UJ	190 UJ
surface	2-Chlorophenol (ug/kg)	13	0	0						14 U	58 U	21.6	19 U	22 U
surface	2-Methylphenol (ug/kg)	13	0	0						1.4 U	58 U	7.49	2 U	19 U
surface	2-Nitrophenol (ug/kg)	2	0	0						96 U	290 U	193	96 U	96 U
surface	4,6-Dinitro-2-methylphenol (ug/kg)	2	0	0						190 UJ	580 U	385	190 UJ	190 UJ
surface	4-Chloro-3-methylphenol (ug/kg)	13	0	0						14 U	120 U	27.8	20 U	38 U
surface	4-Methylphenol (ug/kg)	13	3	23.1	32	76	48.3	37	37	16 U	76	28.8	21 U	58 U
surface	4-Nitrophenol (ug/kg)	2	0	0						96 U	290 U	193	96 U	96 U
surface	Pentachlorophenol (ug/kg)	13	0	0						14 U	96 UJ	25.3	20 U	29 U
surface	Phenol (ug/kg)	13	7	53.8	28	152	91.7	102	108	17 U	152	66.2	68	120 U
surface	2,3,4,5-Tetrachlorophenol (ug/kg)	1	0	0						290 U	290 U	290	290 U	290 U
surface	2,3,5,6-Tetrachlorophenol (ug/kg)	1	0	0						290 U	290 U	290	290 U	290 U
surface	Dimethyl phthalate (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Diethyl phthalate (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Dibutyl phthalate (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Butylbenzyl phthalate (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Di-n-octyl phthalate (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Bis(2-ethylhexyl) phthalate (ug/kg)	2	0	0						120 UJ	130 U	125	120 UJ	120 UJ
surface	Azobenzene (ug/kg)	1	0	0						58 U	58 U	58	58 U	58 U
surface	Bis(2-chloro-1-methylethyl) ether (ug/kg)	2	0	0						19 UJ	58 U	38.5	19 UJ	19 UJ
surface	2,4-Dinitrotoluene (ug/kg)	2	0	0						96 U	290 U	193	96 U	96 U

Surface or Subsurface	Analyte & Units	Number of Samples	Number Detected	%	Detected Concentrations					Detected and Nondetected Concentrations				
					Minimum	Maximum	Mean	Median	95th	Minimum	Maximum	Mean	Median	95th
surface	2,6-Dinitrotoluene (ug/kg)	2	0	0						96 U	290 U	193	96 U	96 U
surface	2-Chloronaphthalene (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	2-Nitroaniline (ug/kg)	2	0	0						96 U	290 U	193	96 U	96 U
surface	3,3'-Dichlorobenzidine (ug/kg)	2	0	0						96 U	290 U	193	96 U	96 U
surface	3-Nitroaniline (ug/kg)	2	0	0						120 UJ	350 U	235	120 UJ	120 UJ
surface	4-Bromophenyl phenyl ether (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	4-Chloroaniline (ug/kg)	2	0	0						58 U	170 U	114	58 U	58 U
surface	4-Chlorophenyl phenyl ether (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	4-Nitroaniline (ug/kg)	2	0	0						96 UJ	290 U	193	96 UJ	96 UJ
surface	Aniline (ug/kg)	1	0	0						58 U	58 U	58	58 U	58 U
surface	Benzoic acid (ug/kg)	2	0	0						190 U	580 U	385	190 U	190 U
surface	Benzyl alcohol (ug/kg)	2	0	0						19 UJ	290 U	155	19 UJ	19 UJ
surface	Bis(2-chloroethoxy) methane (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Bis(2-chloroethyl) ether (ug/kg)	2	0	0						38 U	120 U	79	38 U	38 U
surface	Carbazole (ug/kg)	2	2	100	16	37 J	26.5	16	16	16	37 J	26.5	16	16
surface	Dibenzofuran (ug/kg)	2	2	100	27	50	38.5	27	27	27	50	38.5	27	27
surface	Hexachlorobenzene (ug/kg)	2	0	0						0.2 U	19 U	9.6	0.2 U	0.2 U
surface	Hexachlorobutadiene (ug/kg)	2	0	0						0.25 U	19 U	9.63	0.25 U	0.25 U
surface	Hexachlorocyclopentadiene (ug/kg)	2	0	0						96 UJ	290 U	193	96 UJ	96 UJ
surface	Hexachloroethane (ug/kg)	2	0	0						5.8 U	19 U	12.4	5.8 U	5.8 U
surface	Isophorone (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Nitrobenzene (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	N-Nitrosodimethylamine (ug/kg)	1	0	0						290 UJ	290 UJ	290	290 UJ	290 UJ
surface	N-Nitrosodipropylamine (ug/kg)	2	0	0						38 U	120 U	79	38 U	38 U
surface	N-Nitrosodiphenylamine (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	Dibenzothiophene (ug/kg)	11	8	72.7	3.6	340	69	8.3	142	1.7 U	340	54.2	9.4	142
surface	1,2-Dichlorobenzene (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	1,3-Dichlorobenzene (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	1,4-Dichlorobenzene (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U
surface	1,2,4-Trichlorobenzene (ug/kg)	2	0	0						19 U	58 U	38.5	19 U	19 U

SUPPLEMENTAL FIGURES

Figure 2-1. Linnton Site Bathymetry, Sediment sample Locations and Historical Dredging
(CH2M HILL 2000c)

Figure 3-3. Source/Pathway Locations (CH2M HILL 2000a)

Figure 4. Site Storm Water Drainage/Outfall Map (ESA 2001)

Figure 3-1. Plan View Cross Sections A-A', B-B', and C-C' (CH2M HILL 2000c)

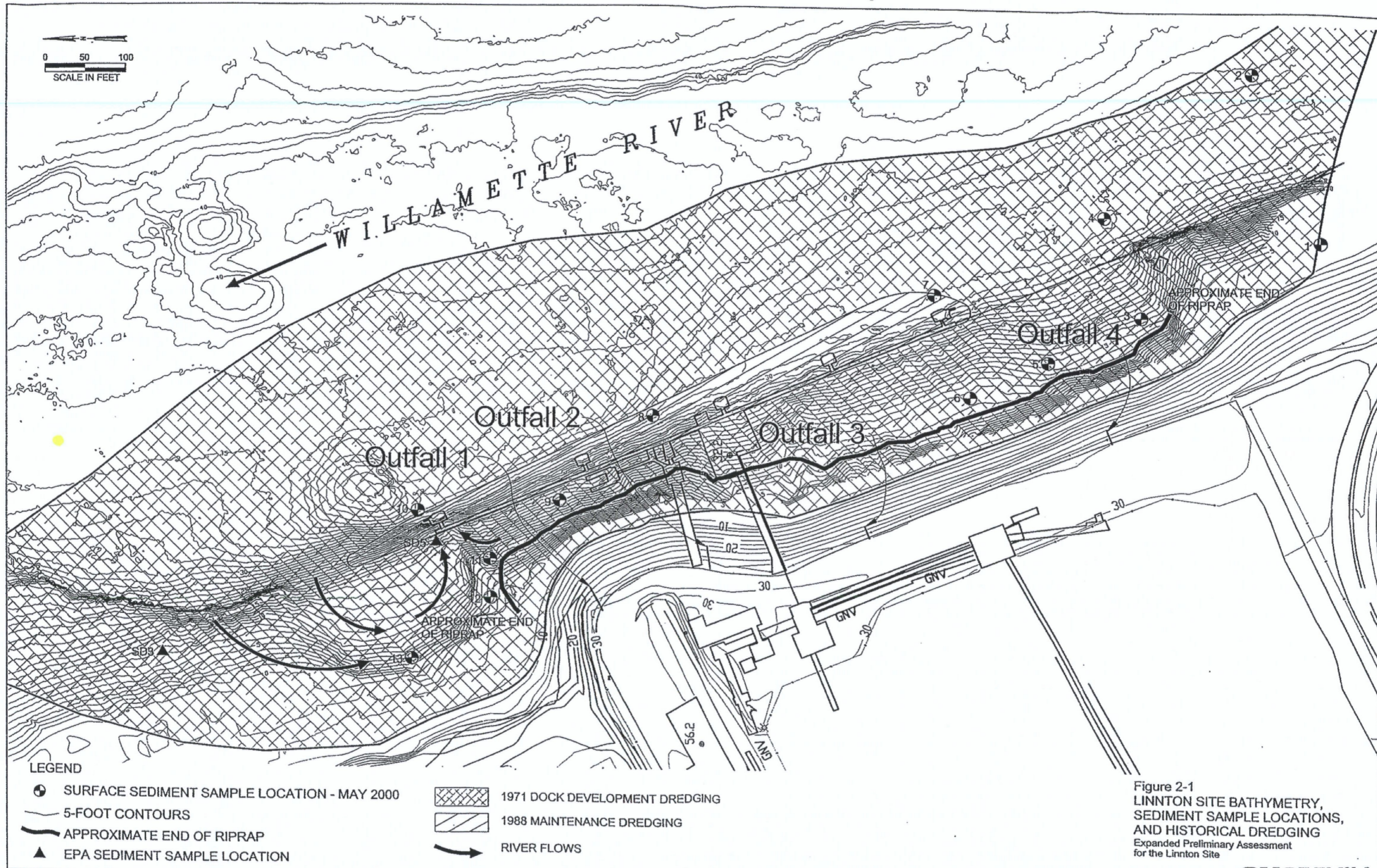
Figure 3-2. Cross Section View A-A' (CH2M HILL 2000c)

Figure 3-3. Cross Section View B-B' (CH2M HILL 2000c)

Figure 3-4. Cross Section View C-C' (CH2M HILL 2000c)

DO NOT QUOTE OR CITE.

This document is currently under review by US EPA and its federal, state, and tribal partners, and is subject to change in whole or in part.



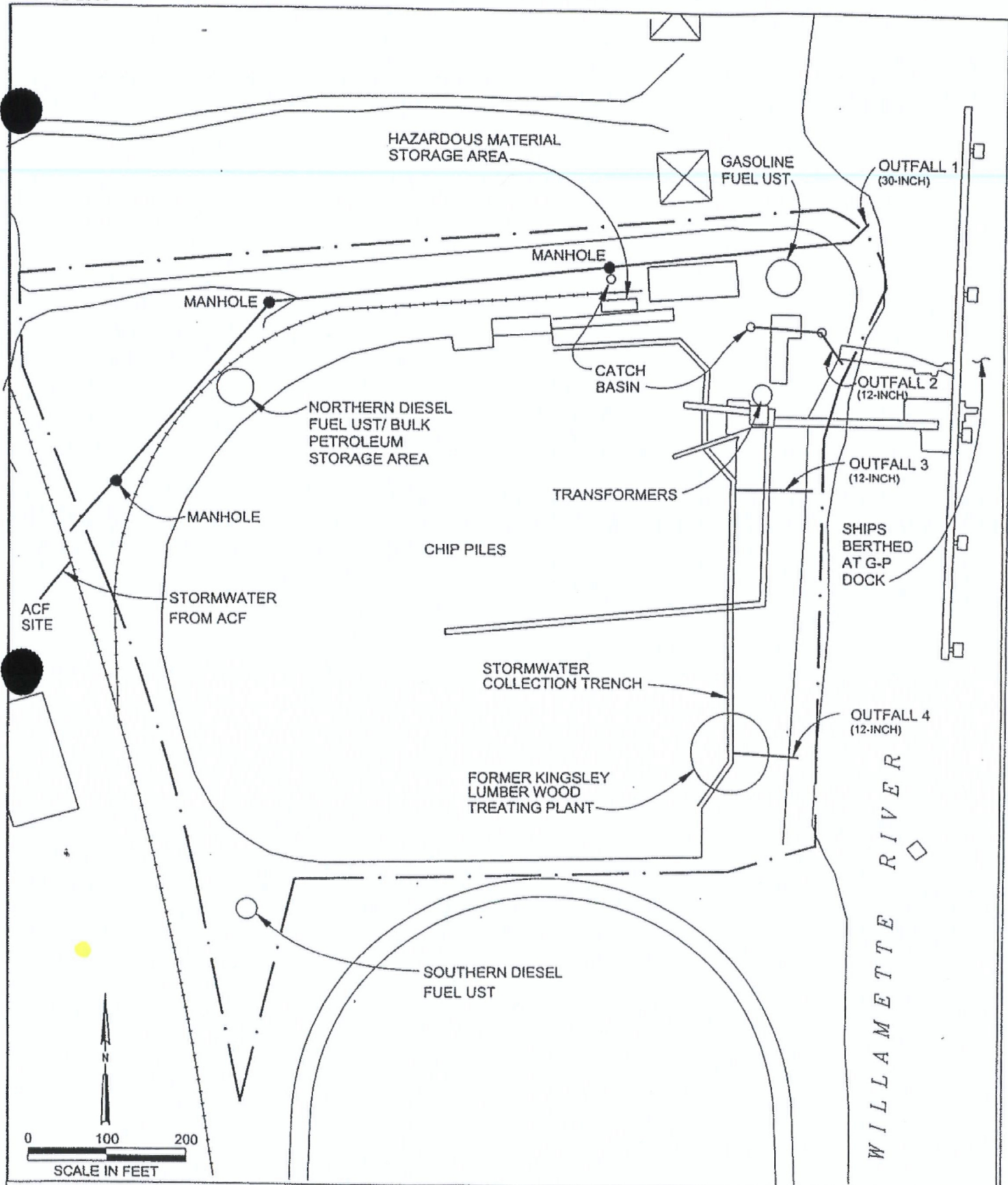
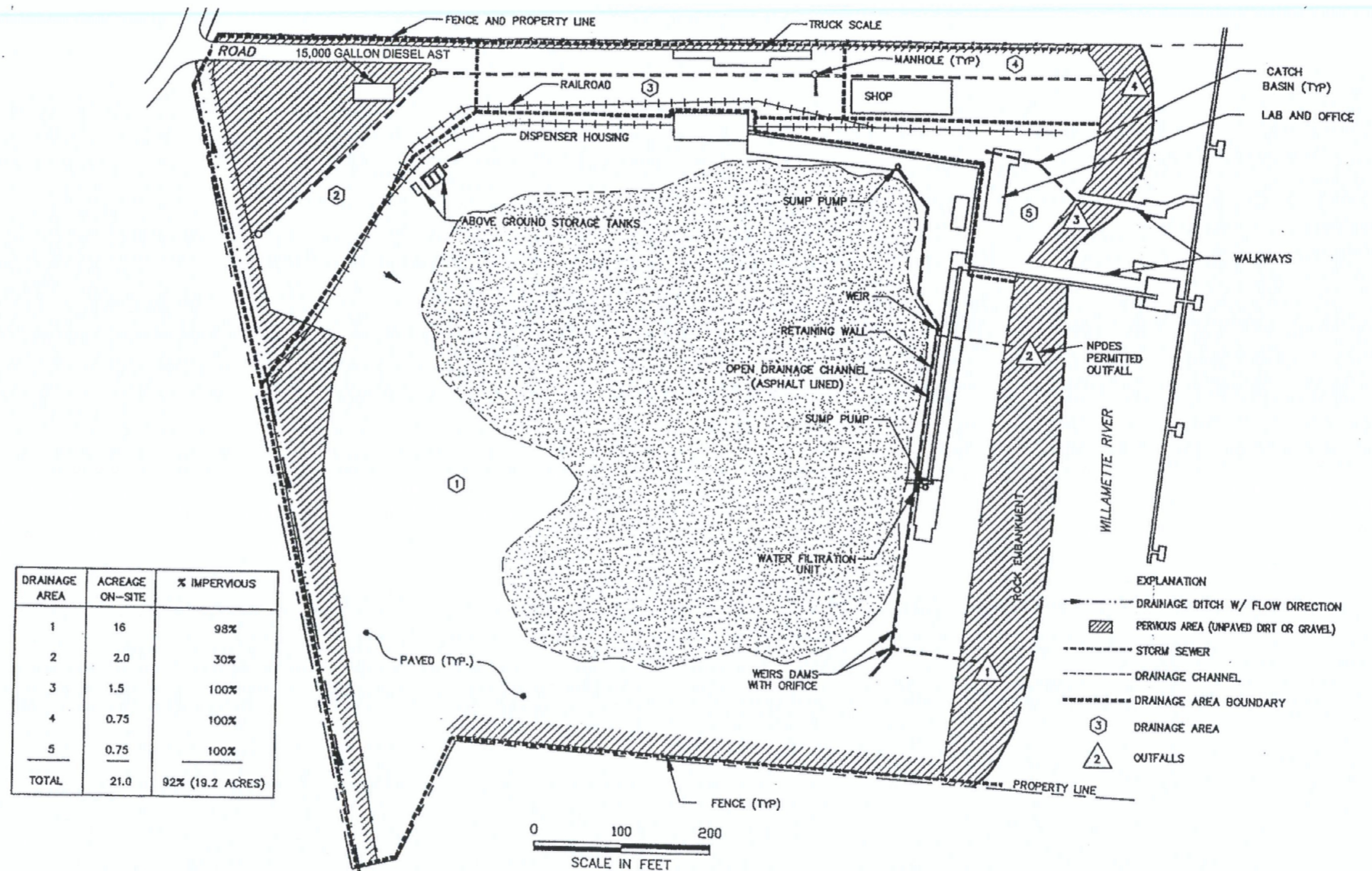


Figure 3-3
SOURCE / PATHWAY
LOCATIONS

Supplemental Preliminary Assessment Report
for the Linnton Site



Morse Brothers Linnton Facility
12222 NW Marina Way
Portland, Oregon 97231

Environmental Science Associates, Inc.
6/10/01

**SITE STORM WATER
DRAINAGE/OUTFALL MAP**

FIGURE 4

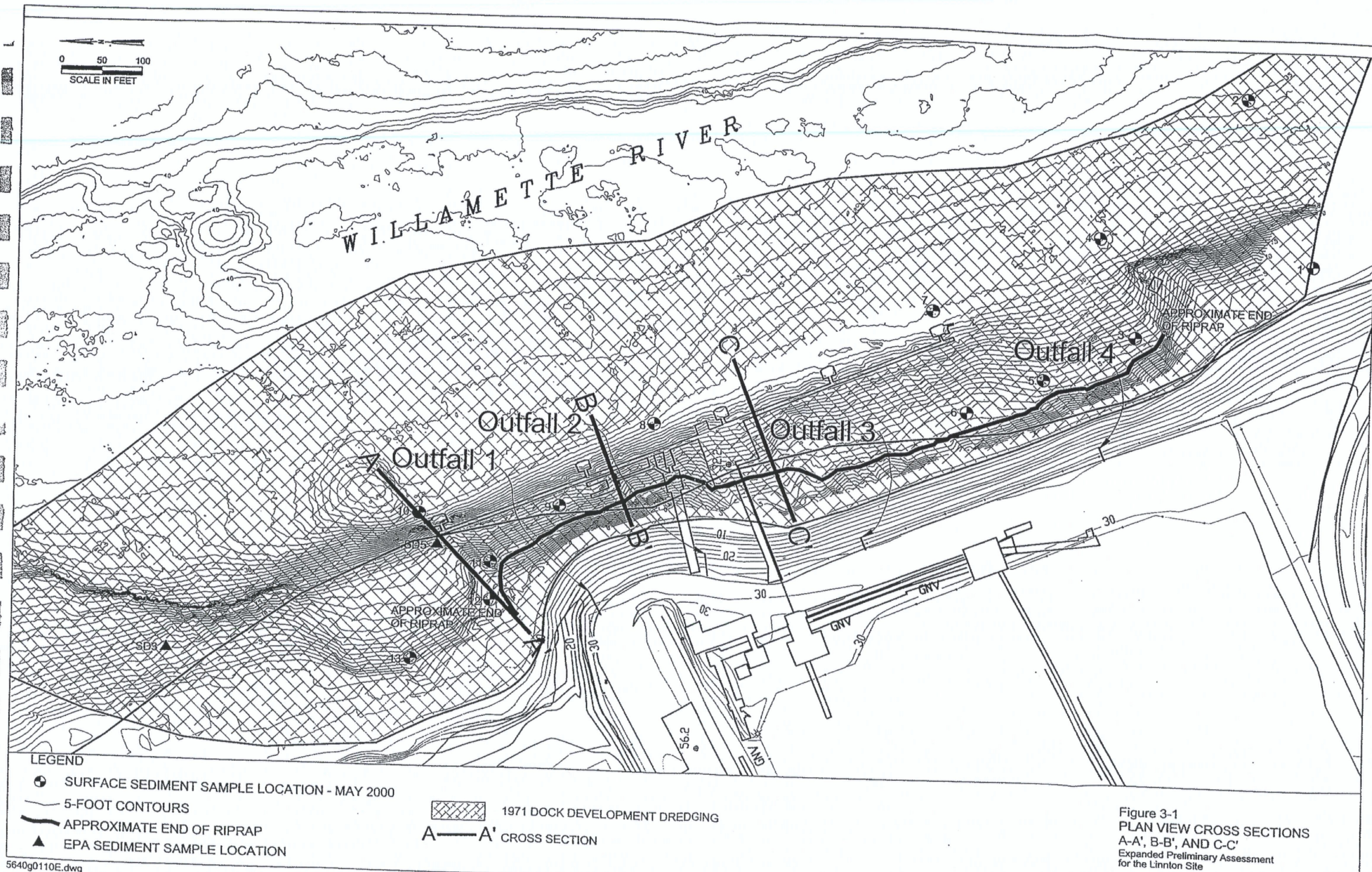


Figure 3-1
PLAN VIEW CROSS SECTIONS
A-A', B-B', AND C-C'
Expanded Preliminary Assessment
for the Linnton Site

CH2MHILL

CROSS SECTION A-A'

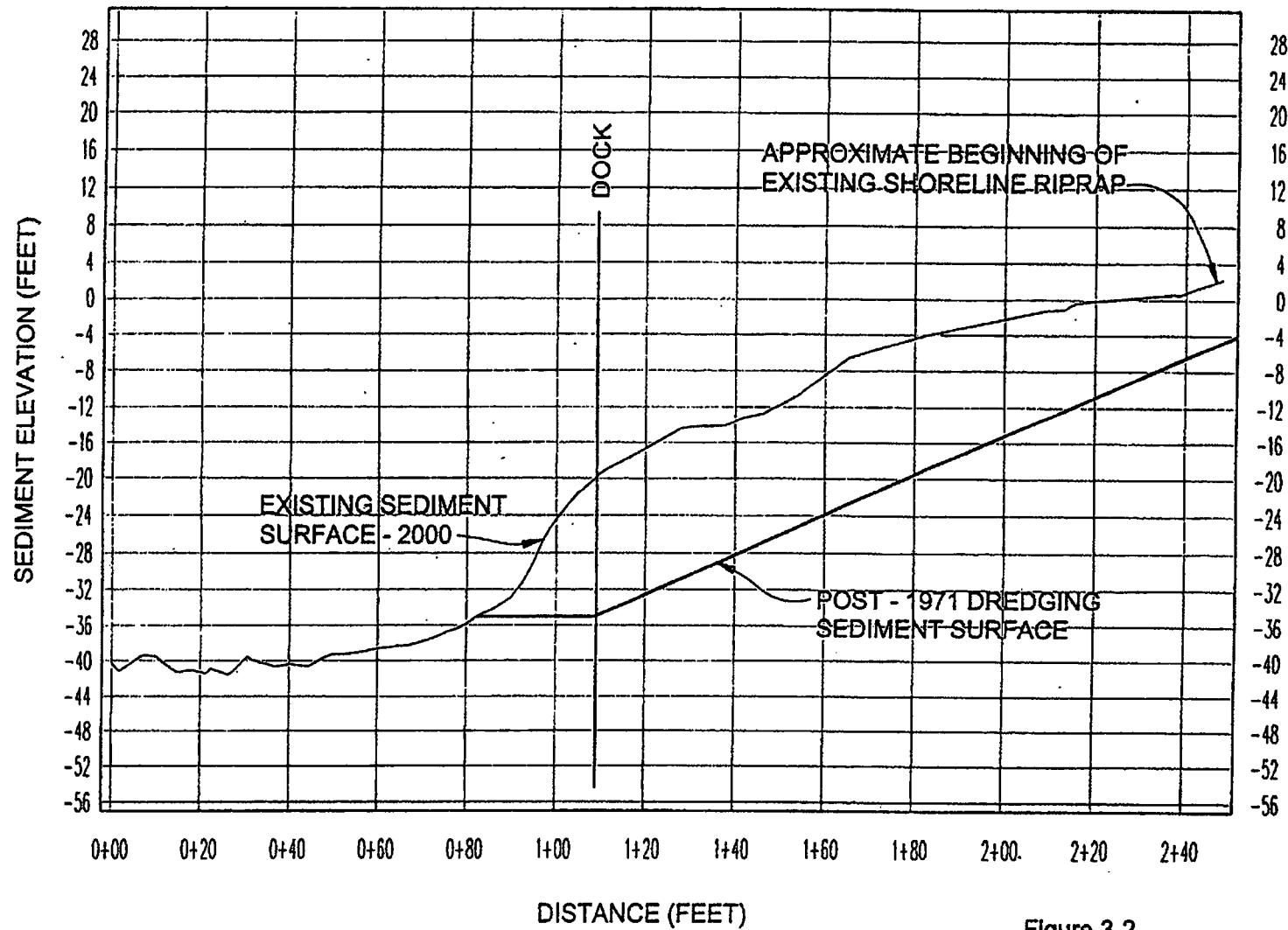


Figure 3-2
CROSS SECTION VIEW, A-A'
Expanded Preliminary Assessment
for the Linton Site

CH2MHILL

CROSS SECTION B-B'

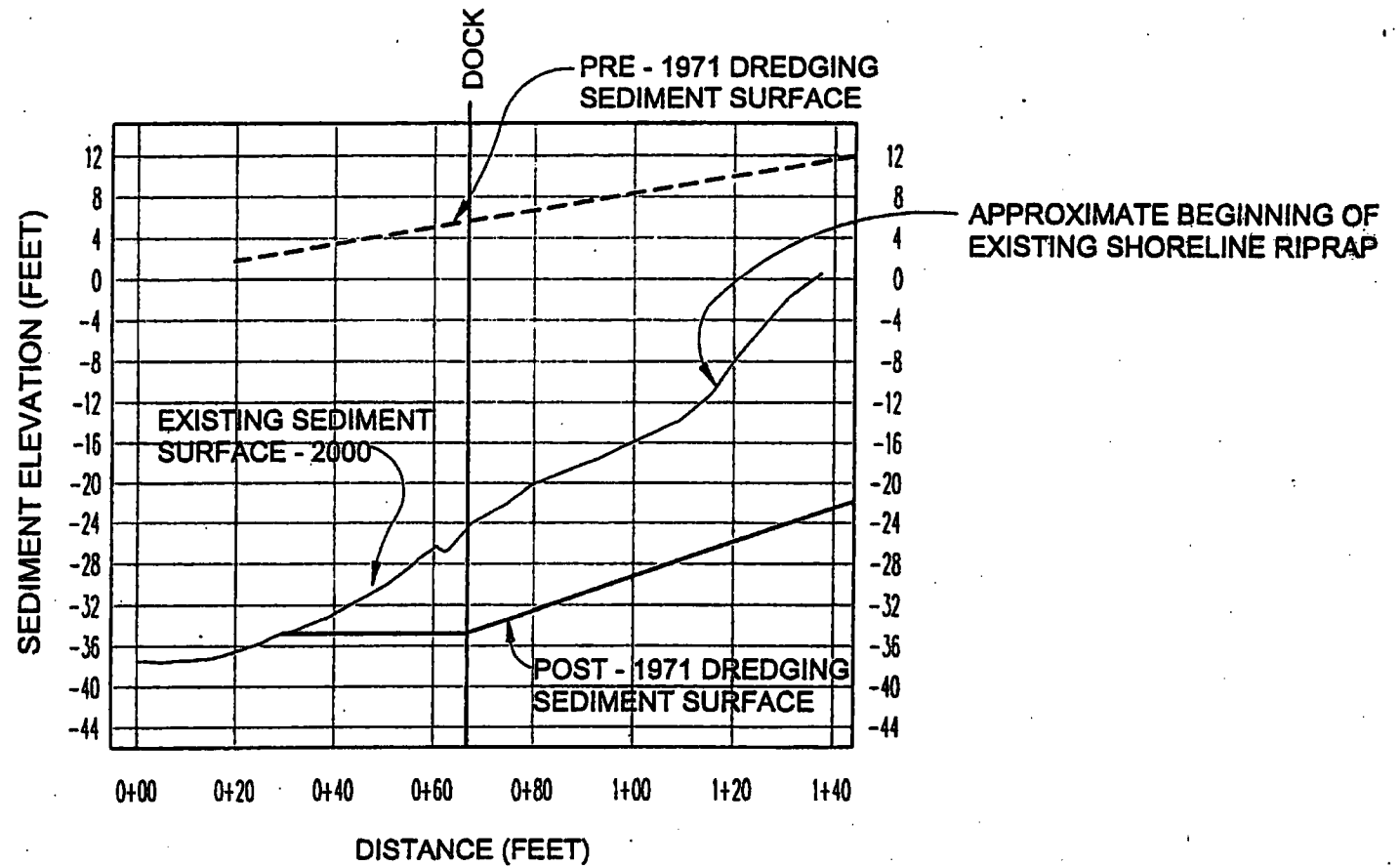


Figure 3-3
CROSS SECTION VIEW, B-B'
Expanded Preliminary Assessment
for the Linnton Site

CH2MHILL

CROSS SECTION C-C'

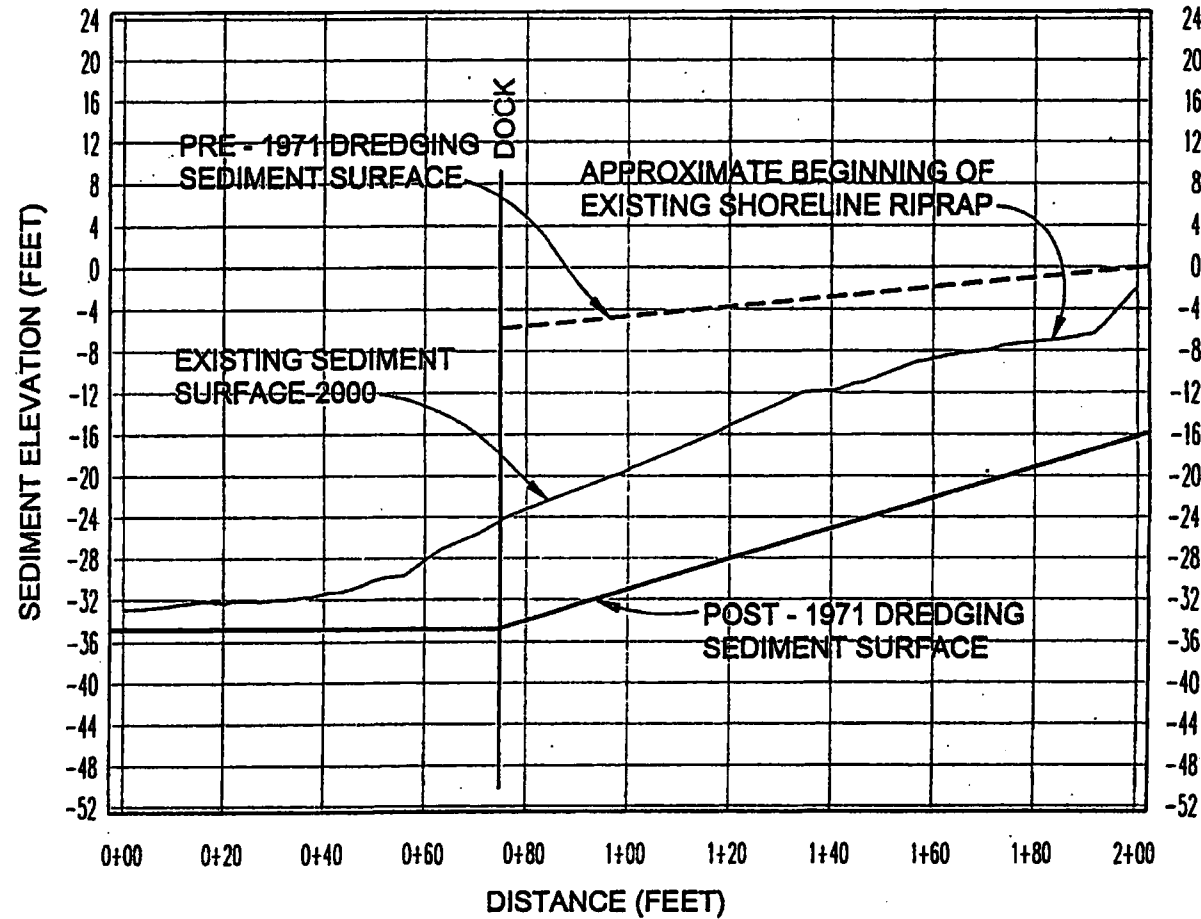


Figure 3-4
CROSS SECTION VIEW, C-C'
Expanded Preliminary Assessment
for the Linnton Site

CH2MHILL

- assembles cardboard boxes
- no real concerns (mostly starches, soy-based inks)

Portland General Electric Harborton

- site is diked
- there are diesel aboveground storage tanks (ASTs) originally intended for backup power for Portland, these ASTs are now empty
- site used primarily for equipment storage
- on-site substation had PCBs, is a permitted TSCA facility
- there was minor amounts of TPH found in soil, immediate remedial action removed 11 cubic yards of soil
- in the 1996 flood (considered a 100-year flood), the diked area remained dry
- no further upland actions recommended

Linnton Oil Fire Training Grounds

- site contains a concrete pad and two ponds for training firefighters
- storm water runs off to ponds which infiltrate to groundwater
- site contains pentachlorophenol, chlorinated solvents, petroleum hydrocarbons, PAHs, but no PCBs
- completed the remedial investigation in 1994, and a soil cleanup in 1996 (which consisted of excavating soils which were treated at TPS)
- ongoing monitoring of groundwater, does not appear contaminants reached the river
- City of Portland Fire Bureau is the responsible party
- originally thought there was no pathway to river (higher ground exists between site and river), but then they found a culvert that provides surface drainage to wetlands north of the site, which drains to river through seeps
- pentachlorophenol was found in the wetlands
- area was flooded in 1996

Georgia Pacific-Linnton

- property now owned by Morse Brothers
- used to store virgin wood chips, contamination is less likely
- in 1971, they installed a dock and storm drain to Outfall 1
- PAH contamination in sediments, may come from ACF site west of the property, ACF repainted railcars
- previously, lumber and creosote were used on site for treating wood near the south, occurred in the 1950s for two decades
- a large amount of sediment was dredged in 1970s for the dock
- dock area was redredged in 1988
- site data show 15 feet of sediment has redeposited since 1971

Owens Corning-Linnton

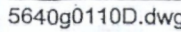


Figure 2-1
LINNONTON SITE BATHYMETRY,
SEDIMENT SAMPLE LOCATIONS,
AND HISTORICAL DREDGING
Expanded Preliminary Assessment
for the Linnont Site

GP - Linton

History

Through late 1950's - Kingsley Lumber operated a sawmill creosote plant in Southern end of property. Creosote Plant in vicinity of current Outfall GP buys in 1971 & redevelops property for wood chip transfer from truck & rail to ship.

Installs stormwater pipe to drain NW corner of property, adjacent to ACF site → discharge @ "Outfall 1"

Extensive dredging to build dock → removes ^{potential} historical contamination

XPA

Soil & GW from uplands - previous ESA by Morse Bros.

GP collects 13 surface sed. samples & bathymetry

DER concludes that Outfall appears to be a source of ^{PAHs} & upland site is not a current source

Up to 15 feet of sed. has been deposited adj. to facility since 1971 dredge. Sed. adj. to historic wood treating operations showed no COIs

Subsequent request to GP to conduct GW investigation is rejected.

EPA concurrence?

Recommendations → subsurface sediment sampling in vicinity of Outfall 1
~ GP sample #10 near N. end of dock

Potential sed. contam. from Wood Treating → difficult, since
~ 16' sed. removed in 1971. (Post 1971 dredge surface)

GP

March 9, 2001

Review of DEQ memo on Feb 6 2001 - GP site

12222 NW Marra Way

→ late 1950's - Kingsey Lumber - sawmill + creosote wood treatment facility

?

1971 - 1996 GP - operated a wood chip transfer facility

1999 - now Merse Brothers - sand + gravel transfer facility

1997 EPA PA(SI - found PAHs + thallium in sediment near GP dock.

13 samples collected for XPA in 2000(?) - Found:

- PAHs (low and high mw) @ Outfall 1
- no PAHs, pentachlorophenol, copper, etc in the samples further down shoreline (outfalls 3+4) ∴ no huge flux from old wood treating site but no gw or upland soil samples so can't say definitively

1) looks good

2) can we get data, electrochemically?

3) did you find the thallium that EPA did?

4) how (when are you going to address the upland gw/soil?)

State of Oregon
Department of Environmental Quality

Memorandum

To: Wallace Reid
Project Manager
Portland Harbor Sediment Investigation
United States Environmental Protection Agency

Date: February 6, 2001

From: Eric Blischke
Technical Coordinator
Portland Harbor Sediment Investigation

Subject: Georgia Pacific Site – 12222 N.W. Marina Way, Portland, Oregon

On October 1, 1999, the Oregon Department of Environmental Quality (DEQ) completed a strategy recommendation for the Georgia Pacific site located at 12222 NW Marina Way in Portland Oregon. The strategy recommendation concluded that a preliminary assessment with sampling (expanded preliminary assessment or XPA) was required at the Georgia Pacific site to evaluate whether the site was a past or current source of sediment contamination within Portland Harbor. The XPA included a review of site history, a summary of previous investigations at the site and the results of a focused sediment investigation. A list of deliverables submitted to DEQ for the Georgia Pacific site is included in the attached memo.

Based on review of the XPA, DEQ has determined that the Georgia Pacific site does not appear to be a current source of Portland Harbor sediment contamination. Although sediments adjacent to the Georgia Pacific outfall were found to contain elevated levels of polycyclic aromatic hydrocarbons (PAHs), there is currently no evidence that Georgia Pacific's operations contributed to this contamination. Because the Georgia Pacific site does not appear to be a current source of Portland Harbor contamination, no additional investigation or source control measures are necessary at the Georgia Pacific site unless additional information becomes available in the future which indicates that the Georgia Pacific site is a current source of Portland Harbor contamination.

Please review the attached information and provide comments within 30 days of the date of this memorandum. DEQ will consider all comments received prior to finalizing its decision regarding the Georgia Pacific site.

If you have any questions regarding this matter, please contact me at (503) 229-5648 or the DEQ project manager, Tom Gainer at (503) 229-5326.

- 1) looks good
- 2) can we get to sediment data electronically, with lot of long information?
- 3) site could still be a problem - how (when are you going to look @ the gw?)
- 4) you didn't mention tracking -
- 5) data, please. & map

State of Oregon
Department of Environmental Quality

Memorandum

To: File
From: Tom Gainer, Project Manager
Tom Roick, Peer Review

Date: February 6, 2001

Subject: Georgia-Pacific Linnton Fiber Terminal
12222 NW Marina Way, Portland, OR

Georgia-Pacific (GP) conducted an Expanded Preliminary Assessment (XPA) at their former Linnton Fiber Terminal as recommended in the Oregon Department of Environmental Quality's (DEQ) 1999 Strategy Recommendation. This memo describes the basis for DEQ's conclusions after reviewing GP's XPA documents. The primary focus of the XPA was to determine if the subject site contributed to sediment contamination or is a current source of sediment contamination— primarily polycyclic aromatic hydrocarbons (PAHs) - observed adjacent to the site in EPA samples collected in 1997.

Upland Site

Morse Brothers purchased the site from GP in 1999. Morse Brothers currently operates a sand and gravel transfer operation on the subject site. GP's operations at the subject site between 1971 and 1996 consisted of unloading untreated wood chips from railcars and trucks to the subject site, and then loading the chips on to ships. Besides machinery fueling and maintenance activities to support the wood chip transfer operations, their operations did not appear to be a significant source of upland surface or subsurface contamination. There were no reported upland spills.

There are four surface/storm water discharge outfalls from the subject site to the Willamette River (Figure 1). Runoff from west of the site (Portland Hills, ACF Inc. site) and from one catch basin collecting surface water in the northern portion of the subject site discharges to Outfall 1. Non-contact cooling water and some storm water discharged to Outfall 2. Runoff from the chip storage area discharged through Outfalls 3 and 4. On February 8, 1995, DEQ issued GP a Notice of Non-compliance for exceeding their NPDES discharge standard for Oil and Grease at Outfall 1. It is not clear to what extent GP operations caused the permit violation relative to discharges to Outfall 1 from other properties. Therefore, GP operations may have been a partial contributor of petroleum hydrocarbons to adjacent Willamette River sediment via stormwater discharges Outfall 1, although it appears that such potential contribution was not large.

Three underground storage tanks (USTs) were removed from the site: a 5,000-gallon diesel UST removed in 1988, a 10,000-gallon gasoline UST removed in 1989, and a 10,000-gallon diesel UST removed in 1995. No or limited soil contamination (which was removed) was encountered during UST removal activities, and groundwater was not encountered. Therefore, the USTs do not appear to be a significant contaminant source.

Kingsley Lumber operated a sawmill and creosote wood treatment facility in the southern portion of the site until the late 1950's. A Phase II Environmental Site Assessment (ESA)

February 6, 2001

DRAFT

conducted in 1999 on the subject site included soil and groundwater sampling in the vicinity of the historic Kingsley operations. However, it appears that subsurface sampling was not conducted within or downgradient of the historic wood treatment operations (Figure 2). Subsurface soil samples from boring E8 and MW2 showed low levels of TPH-Diesel (36 and 44 ppm, respectively). Total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs) were not detected in a groundwater sample from location MW2. Therefore, while it appears that the historic Kingsley Lumber sawmill operations do not represent a significant on-site source, potential subsurface contamination from the wood treatment facility was not adequately evaluated. This issue is further discussed in the sediment sampling results section of this memo.

The remainder of the analytical results from the 1999 Phase II ESA showed no elevated subsurface soil or groundwater contamination on the subject site (relative to DEQ UST and SOCLEAN levels), including the locations of the three former USTs. Subsurface soil and groundwater from sample location MW4 (Figure 2) showed low/moderate levels of TPH-Diesel, which is likely attributable to the adjacent Linnton Oil Fire Training Grounds. Therefore, the subject site does not appear to have significant subsurface source areas of petroleum hydrocarbon contamination that could be discharging to the Willamette River.

Willamette River Sediment

GP conducted extensive dredging in 1971 to allow for construction of the site's dock. Twelve to 35 feet of sediment was removed adjacent to the entire property (approximately 474,000 cubic yards), which was placed at two off-site locations. In 1988 GP dredged an additional 6,000 cubic yards of sediment immediately adjacent to the site's dock during maintenance activities. Therefore, recent sediment sampling activities by the US EPA (1997) and GP (2000) collected sediment deposited after 1971. A bathymetric survey conducted by GP in 2000 shows that approximately 7 to 20 feet of sediment has deposited between 1971 and 2000 adjacent to the subject site between shoreline and the dock.

No significant spills were reported over water adjacent to the site. The potential for contaminant discharge from ships (bilge water, leaks) during of normal use of the GP dock is not well known.

In 1997 the EPA collected one surface sediment sample (SD005) adjacent to the Georgia Pacific dock and in the vicinity of Outfall as part of the Portland Harbor Sediment Investigation. Relative to Portland Harbor baseline concentrations, this sediment sample showed elevated levels of thallium and low- and high-molecular weight PAHs. A sediment sample collected upstream of the subject site (SD011) showed elevated but somewhat lower concentrations of these same contaminants. Therefore, it appears that there is an upstream source of sediment contamination, although transport of contaminated sediment in this area is not well known.

12 inches is not shallow!

Thirteen shallow sediment samples (0 – 12 inches below sediment surface) in the Willamette River were collected in the vicinity of the subject site as part of GP's XPA (Figure 3). Based on site history and the results of the 1997 EPA study, the primary contaminants of concern were PAHs. Analytical results indicate the following:

- low- and high-molecular weight PAH concentrations were elevated above Portland Harbor baseline levels in upstream samples (number 1 and 3), indicating that an

- upstream source(s) may be contributing to PAH contamination observed in sediment adjacent to the subject site;
- PAH concentrations were not elevated in samples 5 through 8, indicating that the southern and middle portions of the site, including Outfalls 3 and 4 and the historic wood treating operations, do not appear to be current sources of PAH contaminants;
 - in addition to PAHs, pentachlorophenol, copper, and chromium concentrations in samples 5 and 6 were not elevated, indicating that the historic wood treatment facility does not appear to be a current source of sediment contamination (the source of pentachlorophenol downstream of the subject site is not known);
 - elevated PAH concentrations in samples 9 through 11 indicate that Outfall 1, and possibly Outfall 2, have contributed to sediment PAH contamination; and
 - elevated levels of arsenic were observed in all thirteen sediment samples, which appears to be a regional condition with no clear association to the subject site.

Conclusions

The following conclusions are based on review of DEQ files and information prepared as part of GP's XPA:

- sediment contamination adjacent to the site in the vicinity of Outfall 1 consists primarily of PAHs;
- Outfall 1 appears to be a source of sediment PAH contamination adjacent to the site;
- GP's operations did not appear to be a significant source of petroleum hydrocarbons to Outfall 1;
- there appears to be an upriver source of PAHs to sediment;
- the upland site does not appear to be a current source of sediment contamination; and
- although the historic wood treatment facility does not appear to be a current source of sediment contamination, site assessments to date have not investigated soil and groundwater in the (upland) vicinity of the wood treatment facility. Further investigation is required to determine whether potential contamination from the historic wood treating facility represents an upland threat to human health or the environment.

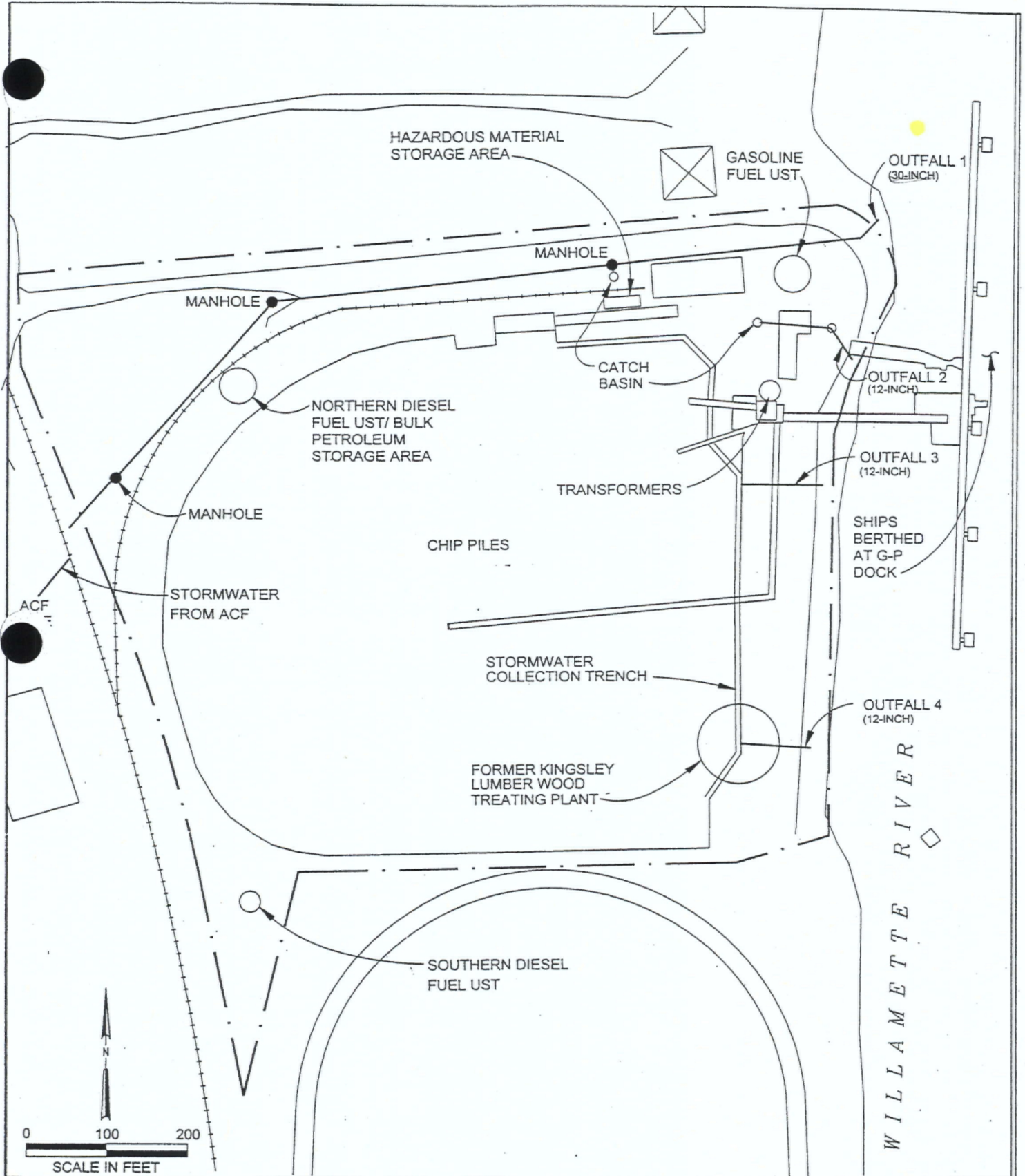
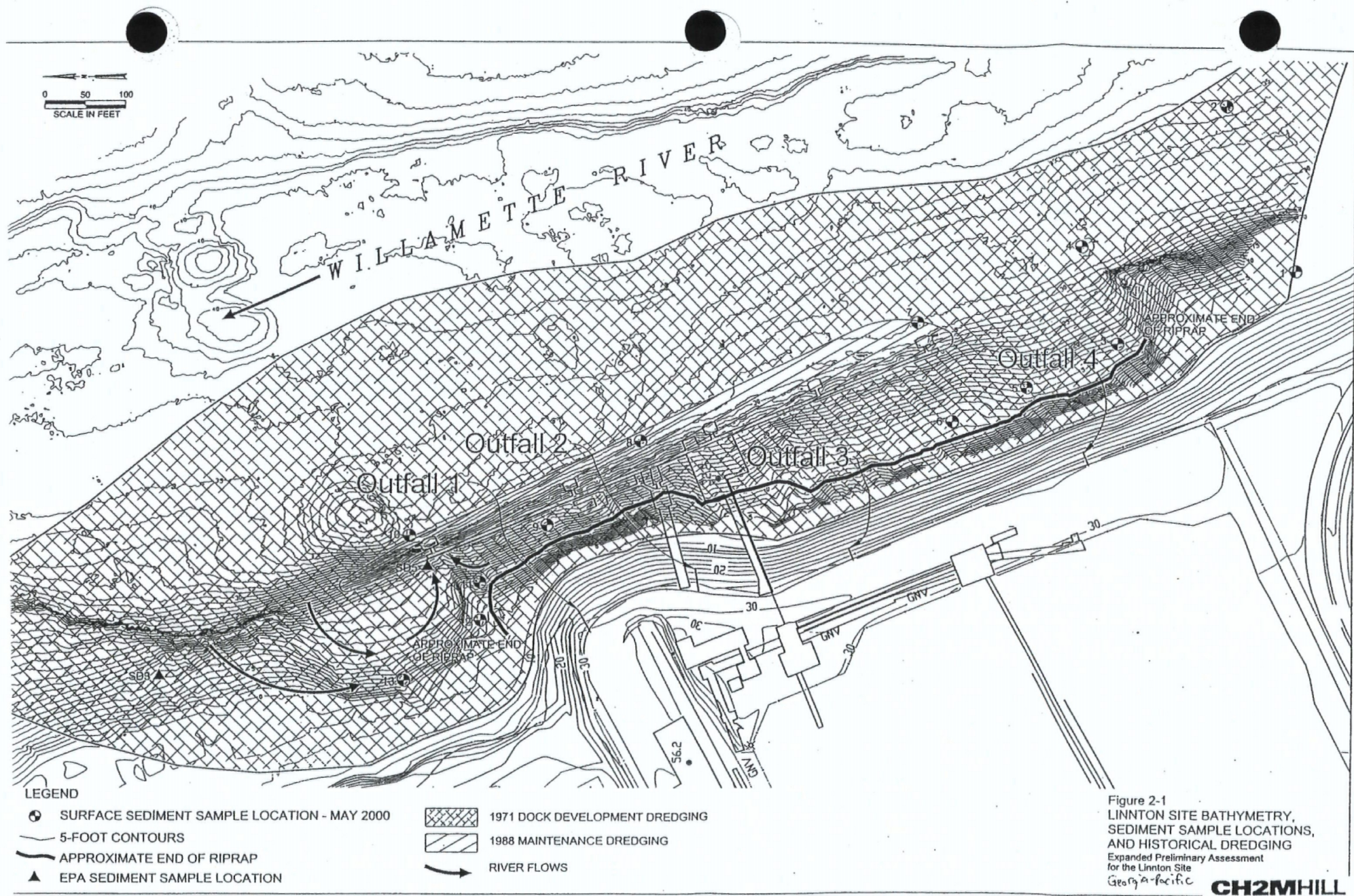


Figure 3-3
SOURCE / PATHWAY
LOCATIONS

Supplemental Preliminary Assessment Report
for the Linnton Site

Georgia-Pacific

CH2MHILL



CH2MHILL



Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality

811 SW Sixth Avenue

Portland, OR 97204-1390

(503) 229-5696

TDD (503) 229-6993

DEPT OF ENVIRONMENTAL QUALITY
October 7, 1999
RECEIVED

OCT 13 1999

NORTHWEST REGION

Mr. Steve Petrin
Senior Environmental Engineer
Georgia-Pacific West, Inc.
900 S.W. Fifth Avenue
Portland, Oregon 97204-1255

SUBJECT: Voluntary Cleanup Letter Agreement

Dear Mr. Petrin:

This letter serves as an agreement between the Oregon Department of Environmental Quality (DEQ) and Georgia-Pacific West, Inc. for performance of a preliminary assessment with sampling regarding hazardous substances at your property located at: 12222 N.W. Marina Way in Portland, Oregon.

You agree to perform a preliminary assessment and submit it to DEQ within 30 business days of your execution of this Letter Agreement. The preliminary assessment will provide the information described in DEQ guidance for the completion of a preliminary assessment and a proposed sampling program. DEQ will review documents submitted by you or on your behalf regarding the preliminary assessment and investigation of the above referenced site.

A sub-account of the Hazardous Substances Remedial Action Fund has been established to be drawn upon by DEQ as project costs are incurred. When you have signed this letter agreement, you will be invoiced monthly for DEQ project costs, including the costs of preparing the DEQ strategy recommendation and any ongoing review and oversight costs. You will pay DEQ invoices within 30 days of receipt. A sample invoice is attached.

DEQ project costs will include direct costs and indirect costs. Direct costs include site-specific expenses and legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division (WMCD) allocable to DEQ oversight of this Letter Agreement which are not charged as direct, site-specific costs. Review and oversight costs shall not include any unreasonable costs or costs not otherwise recoverable by DEQ under ORS 465.255.

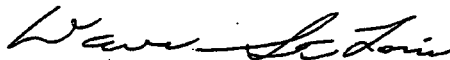
Voluntary Cleanup Letter Agreement
Page 2

This Letter Agreement is not and shall not be construed as an admission by Georgia-Pacific West, Inc. of any liability under ORS 465.255 or any other law or as a waiver of any defense to such liability. This Letter Agreement is not and shall not be construed as a waiver, release or settlement of claims DEQ may have against Georgia-Pacific West, Inc. or any other person or as a waiver of any enforcement authority DEQ may have with respect to Georgia-Pacific West, Inc. or the property. Upon DEQ's request and as necessary to oversight of your work under this Letter Agreement, Georgia-Pacific West, Inc. shall provide DEQ with data and records related to investigation and cleanup activities at the property, excluding any privileged documents identified as such by you.

Following execution of the letter agreement, a DEQ Project Manager will be assigned for the review of the preliminary assessment and oversight of investigation activities associated with your property.

DEQ looks forward to working with you.

Sincerely,



Neil Mullane *For*
Administrator
Northwest Region

Voluntary Cleanup Letter Agreement
Page 3

If the terms of this Letter Agreement are acceptable to Georgia-Pacific West, Inc., please have it executed by an authorized representative in the space provided below and returned to us.

Accepted and agreed to this 12 day of Oct.

By: Roger Sherwood

Title: Environmental Manager, West

Attachment



Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality

811 SW Sixth Avenue
Portland, OR 97204-1390

(503) 229-5696

TDD (503) 229-6993

DEPT OF ENVIRONMENTAL QUALITY
October 1, 1998
RECEIVED

OCT 13 1999

NORTHWEST REGION

Mr. Steve Petrin
Senior Environmental Engineer
Georgia-Pacific West, Inc.
900 S.W. Fifth Avenue
Portland, Oregon 97204-1255

SUBJECT: Voluntary Cleanup Letter Agreement

Dear Mr. Petrin:

This letter serves as an agreement between the Oregon Department of Environmental Quality (DEQ) and Georgia-Pacific West, Inc. for performance of a preliminary assessment with sampling regarding hazardous substances at your property located at: 12222 N.W. Marina Way in Portland, Oregon.

You agree to perform a preliminary assessment and submit it to DEQ within 30 business days of your execution of this Letter Agreement. The preliminary assessment will provide the information described in DEQ guidance for the completion of a preliminary assessment and a proposed sampling program. DEQ will review documents submitted by you or on your behalf regarding the preliminary assessment and investigation of the above referenced site.

A sub-account of the Hazardous Substances Remedial Action Fund has been established to be drawn upon by DEQ as project costs are incurred. When you have signed this letter agreement, you will be invoiced monthly for DEQ project costs, including the costs of preparing the DEQ strategy recommendation and any ongoing review and oversight costs. You will pay DEQ invoices within 30 days of receipt. A sample invoice is attached.

DEQ project costs will include direct costs and indirect costs. Direct costs include site-specific expenses and legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division (WMCD) allocable to DEQ oversight of this Letter Agreement which are not charged as direct, site-specific costs. Review and oversight costs shall not include any unreasonable costs or costs not otherwise recoverable by DEQ under ORS 465.255.

Voluntary Cleanup Letter Agreement

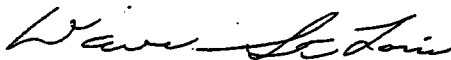
Page 2

This Letter Agreement is not and shall not be construed as an admission by Georgia-Pacific West, Inc. of any liability under ORS 465.255 or any other law or as a waiver of any defense to such liability. This Letter Agreement is not and shall not be construed as a waiver, release or settlement of claims DEQ may have against Georgia-Pacific West, Inc. or any other person or as a waiver of any enforcement authority DEQ may have with respect to Georgia-Pacific West, Inc. or the property. Upon DEQ's request and as necessary to oversight of your work under this Letter Agreement, Georgia-Pacific West, Inc. shall provide DEQ with data and records related to investigation and cleanup activities at the property, excluding any privileged documents identified as such by you.

Following execution of the letter agreement, a DEQ Project Manager will be assigned for the review of the preliminary assessment and oversight of investigation activities associated with your property.

DEQ looks forward to working with you.

Sincerely,



Neil Mullane *For*
Administrator
Northwest Region

Voluntary Cleanup Letter Agreement
Page 3

If the terms of this Letter Agreement are acceptable to Georgia-Pacific West, Inc., please have it executed by an authorized representative in the space provided below and returned to us.

Accepted and agreed to this 12 day of Oct,

By: Roger Sherwood

Title: Environmental Manager, West

Attachment



Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality

811 SW Sixth Avenue

Portland, OR 97204-1390

(503) 229-5696

TDD (503) 229-6993

October 1, 1999

Mr. Steve Petrin
Senior Environmental Engineer
Georgia-Pacific West, Inc.
900 S.W. Fifth Avenue
Portland, Oregon 97204-1255

Re: Georgia Pacific Site: Request for Performance of
Preliminary Assessment with Sampling

Dear Mr. Petrin:

This letter informs you of the results of our review of information regarding hazardous substance contamination at the Georgia Pacific Linnton Fiber (Georgia Pacific) facility located at 12222 N.W. Marina Way in Portland, Oregon. The Oregon Department of Environmental Quality (DEQ) has determined that the Georgia Pacific site is a high priority for a preliminary assessment with sampling and requests that Georgia-Pacific West, Inc. perform a preliminary assessment with sampling in accordance with the Environmental Cleanup Law, Oregon Revised Statutes (ORS) 465.200 *et seq.*

The Georgia Pacific facility is located within or near a portion of the Willamette River known as the Portland Harbor. A 1997 investigation revealed significant contamination of sediments within the harbor. DEQ has undertaken review of available information regarding properties throughout the harbor to identify potential sources of the sediment contamination. The results of DEQ's review for the Georgia Pacific facility are summarized in the enclosed Strategy Recommendation

Based on this review, DEQ has determined additional information is necessary to determine whether hazardous substances have been released or threaten to be released at the Georgia Pacific facility and come to be located in Willamette River sediments. The preliminary assessment with sampling will fully evaluate all upland, in-water and over-water activities that might have resulted in the release of hazardous substances and include sufficient sampling to assess whether hazardous substances have come to be located in Willamette River sediments at or near the Georgia Pacific facility. At a minimum, sampling will include the collection of surface and subsurface sediment samples at appropriate points adjacent to the Georgia Pacific facility.

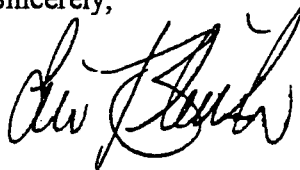
DEQ proposes that your performance of the preliminary assessment with sampling be governed by the enclosed Voluntary Cleanup Letter Agreement. The facility's preliminary assessment with sampling will be coordinated with harbor-wide sediments investigations currently being pursued by DEQ. This will require commencement of the preliminary assessment with sampling at the Georgia Pacific facility in the near future. DEQ therefore requests that you review the enclosed Strategy Recommendation and Voluntary Cleanup Letter Agreement, and inform DEQ whether will perform a preliminary assessment with sampling by signing and returning one original of the enclosed Voluntary Cleanup Letter Agreement within 30 calendar days of mailing of this letter. Please retain one signed original for your records. It is DEQ's expectation that a preliminary assessment and sampling work plan will be completed and submitted to DEQ within six weeks of signing the Voluntary Cleanup Letter Agreement.

Should you not agree to perform the preliminary assessment with sampling by execution of the Voluntary Cleanup Letter Agreement, DEQ will assume you are not willing to perform the requested work. In this case, as with other facilities within the Portland Harbor, DEQ will complete the preliminary assessment with sampling itself, with subsequent cost recovery from liable parties.

Finally, please be advised that DEQ is required by ORS 465.330 to recover remedial action costs incurred by DEQ, including for site assessment activities. You will be receiving an invoice in the near future for DEQ's costs of preparing the Strategy Recommendation for the Georgia Pacific facility. Reimbursement of future DEQ costs will be provided through the Voluntary Cleanup Letter Agreement for the facility, if one is entered.

Please Contact me at 503 229-5648 if you have any questions regarding the enclosed Strategy Recommendation .

Sincerely,



Eric Blischke,
Coordinator
Portland Harbor Study Area
Waste Management and Cleanup Division

Enclosures

c: Kurt Burkholder, DOJ
Dave St. Louis, Manager, NWR Site Assessment Program
Mike Rosen, NWR Voluntary Cleanup Program
Gil Wistar, Coordinator, Site Assessment Program
ESCI File No.: 2370



Oregon

John A. Kitzhaber, M.D., Governor

Department of Environmental Quality

811 SW Sixth Avenue
Portland, OR 97204-1390
(503) 229-5696
TDD (503) 229-6993

October 1, 1999

Mr. Steve Petrin
Senior Environmental Engineer
Georgia-Pacific West, Inc.
900 S.W. Fifth Avenue
Portland, Oregon 97204-1255

SUBJECT: Voluntary Cleanup Letter Agreement

Dear Mr. Petrin:

This letter serves as an agreement between the Oregon Department of Environmental Quality (DEQ) and Georgia-Pacific West, Inc. for performance of a preliminary assessment with sampling regarding hazardous substances at your property located at: 12222 N.W. Marina Way in Portland, Oregon.

You agree to perform a preliminary assessment and submit it to DEQ within 30 business days of your execution of this Letter Agreement. The preliminary assessment will provide the information described in DEQ guidance for the completion of a preliminary assessment and a proposed sampling program. DEQ will review documents submitted by you or on your behalf regarding the preliminary assessment and investigation of the above referenced site.

A sub-account of the Hazardous Substances Remedial Action Fund has been established to be drawn upon by DEQ as project costs are incurred. When you have signed this letter agreement, you will be invoiced monthly for DEQ project costs, including the costs of preparing the DEQ strategy recommendation and any ongoing review and oversight costs. You will pay DEQ invoices within 30 days of receipt. A sample invoice is attached.

DEQ project costs will include direct costs and indirect costs. Direct costs include site-specific expenses and legal costs. Indirect costs are those general management and support costs of the DEQ and of the Waste Management and Cleanup Division (WMCD) allocable to DEQ oversight of this Letter Agreement which are not charged as direct, site-specific costs. Review and oversight costs shall not include any unreasonable costs or costs not otherwise recoverable by DEQ under ORS 465.255.

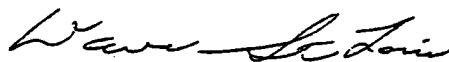
Voluntary Cleanup Letter Agreement
Page 2

This Letter Agreement is not and shall not be construed as an admission by Georgia-Pacific West, Inc. of any liability under ORS 465.255 or any other law or as a waiver of any defense to such liability. This Letter Agreement is not and shall not be construed as a waiver, release or settlement of claims DEQ may have against Georgia-Pacific West, Inc. or any other person or as a waiver of any enforcement authority DEQ may have with respect to Georgia-Pacific West, Inc. or the property. Upon DEQ's request and as necessary to oversight of your work under this Letter Agreement, Georgia-Pacific West, Inc. shall provide DEQ with data and records related to investigation and cleanup activities at the property, excluding any privileged documents identified as such by you.

Following execution of the letter agreement, a DEQ Project Manager will be assigned for the review of the preliminary assessment and oversight of investigation activities associated with your property.

DEQ looks forward to working with you.

Sincerely,



Neil Mullane *For*
Administrator
Northwest Region

Voluntary Cleanup Letter Agreement
Page 3

If the terms of this Letter Agreement are acceptable to Georgia-Pacific West, Inc., please have it executed by an authorized representative in the space provided below and returned to us.

Accepted and agreed to this _____ day of _____,

By: _____

Title: _____

Attachment

DEQ SITE ASSESSMENT PROGRAM - STRATEGY RECOMMENDATION

Site Name: Georgia-Pacific - Linnton Fiber Terminal

Site CERCLIS Number: (none)

DEQ ECSI Number: 2370

Site Address: 12222 NW Marina Way
Portland, OR 97231

Recommendation By: Steve Fortuna, Voluntary Cleanup and
Site Assessment Section, DEQ Northwest
Region

Approved By: Mike Rosen, Manager, Voluntary Cleanup
and Site Assessment, DEQ Northwest Region

Date: September 21, 1999

NOTE: This site is within a 6-mile stretch of the Lower Willamette River in which the U.S. Environmental Protection Agency (EPA) conducted a sediment study in 1997. This area, referred to as the *Portland Harbor*, is between the upstream ends of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5). The purpose of this Strategy Recommendation is to determine whether a specific hazardous substance release or a specific past operation at the site can be linked to contamination documented by EPA in sediments adjacent to the site.

Background, Portland Harbor Sediment Evaluation

In September and October 1997, EPA's contractor, Roy F. Weston, Inc., collected 187 near-shore sediment samples within the Portland Harbor area defined above. Most samples (150) were collected as shallow grab samples within the upper 6 to 17 centimeters (cm) of sediments. 37 deeper composite core samples, from depths of between 55 and 139 cm, were also collected. All samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), total organic carbon (TOC), and sediment grain size. Selected samples were also variously analyzed for organotins (TBTs), pesticides, polychlorinated biphenyls (PCBs), chlorinated herbicides, and polychlorinated dioxins and dibenzofurans.

Based on analytical results from this study, which showed extensive sediment contamination, EPA is currently considering Portland Harbor for inclusion on the federal National Priority List (NPL - also known as Superfund).

Between late 1998 and mid-1999, DEQ examined EPA's analytical data to determine potential sources for sediment contamination in the Harbor. Potential sources associated with the most contaminated areas of sediment were sites already active in DEQ's Cleanup Programs.

DEQ categorized other areas of sediment contamination (i.e., those areas not thought to be associated with active Cleanup Program sites) by defining the areas:

- having the highest detected concentration of a given contaminant;
- with contaminant concentrations in the upper five percent of a given contaminant's detected concentrations; and
- having contaminant concentrations above an apparent "baseline range" most commonly detected throughout the harbor area.

DEQ categorized in this manner because there are no established freshwater sediment contaminant concentration guidelines or well-defined background contaminant concentrations for the harbor area. The contaminant baseline range was developed by examining the geometric distribution of concentrations for each contaminant detected. Any sediment concentrations that appeared to depart significantly from the ranges most commonly detected were suspected of lying near a potential contaminant source.

One shallow sediment sample (SD005) was collected near the downstream end of the Georgia-Pacific (G-P) Linnton Fiber Terminal facility, about 180 feet off shore, at the downstream end of the G-P facility's dock (see Figure 1). The sample contained concentrations of iron and arsenic that were somewhat higher than Portland Harbor baseline values (from 6 to more than 20 percent higher, respectively), while concentrations of thallium, low molecular weight polycyclic aromatic hydrocarbons (LPAHs), and high molecular weight polycyclic aromatic hydrocarbons (HPAHs) were significantly higher than baseline values (1.8, 1.7 and 2.6 times baseline values, respectively). PCBs and TBTs were not analyzed at SD005¹.

¹ TBTs could be a potential contaminant of concern at the Georgia Pacific site because of ship docking and mooring activities. PCBs could be a potential contaminant of concern because of an electrical substation located near the northeast corner of the facility.

The arsenic, iron, LPAH, and HPAH concentrations were higher than those observed in sediments at the nearest upstream shallow sediment sampling location (SD011). Sampling point SD011 was located about 75 feet offshore, near the downstream end of a dock at an adjoining Owens-Corning / Trumbull Asphalt facility, about 560 feet upstream from the G-P property line (see Figure 1).

Another shallow sediment sample (SD003) was collected about 340 feet further downstream from SD005, about 175 feet offshore from a wetland area that separates the G-P facility and a Portland General Electric electrical switching and substation facility (see Figure 1).

Sediment concentrations of mercury, thallium, pentachlorophenol (PCP), LPAHs, and HPAHs exceeded Portland Harbor baseline values at SD003. LPAH and HPAH concentrations were 2.8 and 4.5 times the corresponding baseline maximum values, respectively, while the PCP concentration at SD003 (110 ppb) was the highest detected Portland Harbor sediments. PCBs, and TBTs were not analyzed at sampling point SD003. Activities at nearby ACF Industries and Portland General Electric properties may have contributed to some of the contamination observed at SD003.

Although sediment concentrations of LPAHs, HPAHs, 2-methylnaphthylene, carbazole, TOC, and mercury were higher downstream from the G-P facility (at SD003), concentrations of 4-methylphenol and most metals were higher near the G-P dock (see Table 2).

The sediment data suggest that significant sources of LPAH and HPAH sediment contamination may be located at or near the G-P facility, and that these sources may also have contributed lesser amounts of 4-methylphenol, arsenic, iron, lead, and manganese to river sediments.

Operational History

Georgia-Pacific West, Inc. (G-P), a wholly-owned subsidiary of Georgia-Pacific Corporation, operated a wood chip export terminal on a 21.5 acre tract just east of the intersection of NW Saint Helens Road (US Highway 30) and NW Marina Way in Portland from mid-1972 to mid-1996 (see Figures 2 and 3). Since mid-1996, site activities have largely been limited to the berthing of ships that await repairs at local off-site drydock facilities.

The site is bounded on the southwest by a former ACF Industries railcar repair and repainting facility (ECSI #794), on the northwest

by a wetlands area that separates the facility from the Portland General Electric (PGE) Harborton electrical substation (ECSI #2353), on the northeast by the Willamette River, and on the southeast by the Owens-Corning / Trumbull Asphalt asphalt storage and roofing shingle manufacturing facility (ECSI #1036). A Burlington Northern - Santa Fe (BNSF) Railroad right-of-way and tracks separate the G-P facility and the former ACF Industries facility. The former Linnton Oil Fire Training Grounds (LOFTG; ECSI #1189) is located at the northwestern corner of the G-P facility.

Until the late 1950's, the southeastern half of the subject site was occupied by structures owned and operated by Kingsley Lumber Company and West Oregon Lumber Company. Lumber storage facilities were located on the southwestern quarter of the site, while a sawmill and a creosoting plant occupied the southeastern quarter. Aerial photos and Sanborn Fire Insurance maps indicate that the sawmill and creosoting operation were both located less than 50 feet from the river (see Figures 5 and 6)². The elevated concentrations of PAHs and 4-Methylphenol³ that were detected near the downstream end of G-P's dock may be consistent with sawmill and wood treating operations. It is not known if the former creosoting plant used any other common wood preservatives such as PCP or copper, chromium, and arsenic.

Wood treatment operations were also conducted on the southern half of the Owens-Corning / Trumbull Asphalt property in 1969-1970, while Rivergate Timber Company occupied the site. Relatively low concentrations of PCP, copper, and arsenic were detected in site soils in 1990, while total arsenic was encountered in groundwater at up to twice the Drinking Water Maximum Contaminant Level (MCL).

G-P acquired the property in 1971 from Kingsley Lumber Company, and is currently in the process of selling it to Morse Brothers, Inc., a commercial sand and gravel supplier and aggregate mining company.

During 1972 site development, G-P evidently had sediments along the shoreline between the PGE Harborton substation and the Kingsley Lumber Company (now Owens-Corning) property dredged to allow construction of a dock and for cargo ship access (discussed further in this document's *Regulatory History* section). G-P evidently holds

² According to Sanborn Maps, the creosote treating plant had two large above ground storage tanks located about 50 feet from the river, while its compression retort appears to have extended to within 5 feet of the river.

³ Although the concentration of 4-methylphenol detected in river sediments at sampling point SD005 (32 ppm) was substantially below the Portland Harbor baseline maximum value of 680 ppm, it was 33 to 36 percent higher than concentrations detected at the nearest upstream (24 ppm at SD011) and downstream (23 ppm at SD003) sediment sampling locations. 4-Methylphenol can be found both as a creosote constituent and as a common wood decomposition product.

a 300 foot long riverfront dredging easement along a wetlands area that separates the chip storage facility from the PGE substation.

Beginning in mid-1972, G-P received truck and railcar loads of fir and pine wood chips from G-P facilities and other independent lumber and plywood mills throughout the Willamette Valley, Eastern Oregon, Washington, and Idaho, and exported the chips to Japan by bulk cargo ship.

When G-P first began site operations in 1972, the company relied on a pneumatic conveyor system to transfer the wood chips to either the chip stockpiles or onto ships. The pneumatic conveyor system was equipped with water spray injectors for lubrication and to minimize particulate emissions, although by 1974 local complaints about wind-blown particulates forced the company into a series of process modifications that substantially reduced use of the pneumatic conveyor system. Complaints about the particulate fallout extended into mid-1982.

Wood chips delivered to the G-P facility were relatively small in size⁴, and unless kept wet, represented a significant wind-blown particulate concern. Ideally, moisture content of the chips was to be maintained at about 50 percent to minimize wind-borne particulate emissions, although actual moisture content was reported to vary between 15 and 70 percent. G-P withdrew water from the river at up to 325 gallons per minute (typically 72,000 gallons per day), passing a portion of the water through a heat exchanger used to cool oil that was used for lubricating plant equipment. Much of the remaining water (up to about 50,000 gallons per day) was used to keep the wood chips moist. Any excess water that was applied to the chips either evaporated or ran off to the river. With wood chip moisture levels of 50 to 70 percent, leachate generation might be a potential concern.

By June 1975, G-P decided to begin modifying its ship loading equipment because of concerns about potential enforcement actions by the US Coast Guard (USCG) and DEQ Water Quality Division over wood chips losses to the river during ship loading activities. Although modifications to the ship loading equipment were completed in late July 1975, DEQ inspection records indicate that chip losses to the river continued through at least December 1981.

Wood chips from lumber and plywood mills have sometimes been found to be contaminated with petroleum or wood preserving agents such as PCP, or copper, chromium, and arsenic. However, it is not known

⁴ Approximately 90 percent of the wood chips ranged in size between 3/16 inch to 1-1/4 inch in diameter.

whether wood chips handled at the G-P facility contained these substances.

Facility features at the G-P Linnton site include a 1,200 foot long river dock, various wood chip conveyer systems, railcar roll-over and truck tilt-up unloading systems, truck scales, five above ground petroleum storage tanks (for storing diesel fuel, hydraulic oil, transmission oil, motor oil, and waste oil), a fuel dispensing area, a mobile waste oil tank, laboratory and shop buildings, an equipment storage area, an electrical substation, and a hazardous waste management area (see Figure 4).

According to site diagrams, the electrical substation is located near the northeast corner of the facility. There are no records to indicate whether the substation has PCB-containing components, or if any releases have occurred in the substation area.

According to files for the neighboring LOFTG site, an underground diesel fuel pipeline also exists between the G-P dock and two large fuel storage tanks (8.4 million gallon total capacity) at the southwest corner of the nearby PGE Harborton facility. The exact location of the pipeline is unknown, although it reportedly crosses the western edge of the LOFTG site.

In addition to the various air pollution complaints from local residents about particulate fallout from G-P's wood chip handling operations, DEQ files also contain records of a complaint that G-P initiated against one of its neighboring industrial facilities. In December 1971, G-P complained to DEQ that the neighboring ACF Industries facility was allowing its wastewater settling pond to overflow to a drainage ditch on G-P property. Any residual, persistent contaminants in the drainage ditch near the northwest corner of the G-P facility could contaminate local groundwater and eventually discharge to the nearby wetlands area or river. An inlet to G-P's stormwater sewer system is located along the ditch which could also allow direct discharge of contaminants to the river during ditch overflow conditions. This issue, which DEQ addresses in its recent Strategy Recommendation for the ACF Industries facility, is considered to be the responsibility of ACF industries and not G-P.

Although the G-P chip terminal has largely been inactive since mid-1996, during a February 1999 riverfront reconnaissance survey, DEQ Site Assessment personnel observed a tank truck along the facility's northeast perimeter that appeared to be discharging water to the river (see Photo C of Plate 2). It is not known why the tank truck would be discharging to the river, or what the source of the water may have been.

Regulatory History

Air Quality Permit

Although the G-P Linnton Fiber Terminal is currently inactive, it continues to hold a Minimal Source Air Contaminant Discharge Permit. An Air Contaminant Discharge Permit (ACD) was originally issued in 1975.

During the first few years of plant operations, fallout from the G-P site's wood fiber emissions were deposited at nearby residences, the Saint Brigetta church, the Owens-Corning facility, the LOFTG site, the PGE Harborton substation facility, and the river.

A series of equipment and materials management improvements by G-P significantly reduced the facility's wood fiber emissions, although G-P was never able to meet the permit requirement for emissions of fibers larger than 250 microns specified in the facility's early ACD permit and permit revisions. In 1981, DEQ granted the facility a waiver for fiber emissions larger than 250 micron.

DEQ records indicate that a nearby resident filed an additional wood fiber fallout complaint against the G-P facility within two weeks after the waiver took effect. DEQ appears to have taken no direct action against G-P as a result of the complaint. The continuing releases of wood fibers may have impacted the river and affected river sediment quality if the fibers contained petroleum or wood-treating chemicals.

Water Quality Permits

In March 1975, DEQ issued G-P a Water Quality Permit that allowed direct discharge of uncontaminated non-contact cooling water and uncontaminated stormwater to the river. Discharges to the river were to be monitored monthly for flow rate, temperature, and pH. Discharges of petroleum to the river were prohibited. The original permit also required that cooling water discharges to an on-site open ditch be discontinued and rerouted to a water-tight, subsurface drainpipe system. The site has no oil/water separators. Since 1975 a filter system has been used to capture wood chips before surface runoff discharges to the river.

Non-contact cooling water (and some stormwater) was discharged to the river through a 12 inch pipe that opened below a walkway leading to the site's dock (Outfall 3 of Figure 4). Runoff from the chip storage area discharged through two other 12 inch pipes located along the southern two-thirds of the site's riverfront

(Outfalls 1 and 2 of Figure 4). Runoff from the Portland Hills, as well as some runoff from the northern edge of the site, discharged to a 30 inch outfall pipe near the northeastern corner of the site (Outfall 4 of Figure 4).

In October 1992, the facility was issued a separate Stormwater permit that required stormwater to be monitored twice annually for pH, total suspended solids (TSS), biochemical oxygen demand (BOD), chemical oxygen demand (COD), total organic carbon (TOC), and oil and grease (O&G). However, DEQ has records for only four stormwater sampling events between December 1992 and January 1997. A sample collected from the northern outfall (Outfall 4 of Figure 4) on December 31, 1993, contained 19 ppm O&G. Because of the O&G detection, DEQ issued G-P a Notice of Noncompliance on February 8, 1995.

Significantly elevated concentrations of COD (up to 488 ppm) and TOC (up to 160 ppm) were detected in stormwater runoff from the site's two southern stormwater outfalls (Outfalls 1 and 2 of Figure 4) in December 1992 and April 1993, with corresponding TSS concentrations ranging between 11 and 94 ppm. These data suggest that runoff from G-P's chip piles contained significant soluble (or filterable) concentrations of both organic and oxidizable inorganic constituents. The two southern outfalls discharge runoff from the site's wood chip storage area.

Runoff from the site's chip pile was also sampled on at least two occasions during DEQ field inspections of the facility. A runoff sample collected in August 1975 contained 37 ppm COD, 2.7 ppm lignins and tannins, and 3.6 ppm iron. When sampled in January 1976, the runoff contained 12.5 ppm iron⁵.

Runoff from the chip piles could have resulted in releases of TOC, COD, lignins and tannins, and iron to the river and to sediments.

Hazardous Waste Generator Status

The G-P Linnton Fiber Terminal has been a registered RCRA Hazardous Waste Generator since 1981. DEQ records indicate that the facility originally qualified as a Large Quantity Generator (LQG) because of a one-time generation of 4,000 gallons of hazardous waste, although detailed records describing this event could not be readily located. The facility's status was revised to Small Quantity Generator (SQG) in 1991, based on the volumes of waste oil and benzene- and perchlorethylene-containing "Safety Kleen" parts cleaning solvent that were generated (approximately

⁵ Neither COD nor lignins and tannins were analyzed during the January 1976 sampling event.

300 pounds per year). In 1992, the facility was reclassified as a Conditionally Exempt Small Quantity Generator (CEG).

G-P maintained a hazardous waste and waste oil storage area along the northeastern edge of their chip storage area (see Figure 4). Any surface runoff from the hazardous waste storage area would likely discharge directly to the river near G-P's main stormwater sewer outfall.

River Sediment Dredging Permit

In February 1972, the U.S. Army Corps of Engineers (USACE) issued G-P a permit (Permit #071-OYA-2-000725) that allowed the company to dredge river sediments between the southern end of PGE's substation area to the northern end of the Kingsley Lumber Company facility (now the Owens Corning / Trumbull Asphalt facility) and dispose of the dredged wastes at two upland locations: on the PGE Harborton substation property and near the southern tip of Sauvie Island, on property owned by Alder Creek Lumber Company. The purpose of the dredging was to allow construction of the site's dock and for cargo ship access.

During the previous year, USCG reported that the neighboring ACF Industries facility appeared to have been discharging "quite a bit of heavy oil" to the wetlands area north of the G-P facility for "several years". USCG concluded that contaminants within the wetlands area could be transported to the river during periods of heavy rainfall. Any historic Sediment contamination that may have been present along the wetlands area north of the G-P facility, or along the former sawmill and creosoting plant on the southern half of the G-P riverfront, in 1972 could have been transported to uplands portions of the PGE and Alder Creek Lumber facilities (see Figure 7). Such contamination could represent a potential threat to the wetlands area north of the PGE facility, or to the river along the PGE and Alder Creek Lumber sites.

G-P indicated that USACE also issued the facility a Regional Maintenance Dredging Permit (Permit #071-OYA-2-0004387) in 1988. A copy of the permit could not be readily located at DEQ to determine if additional sediment contamination has been encountered along the facility's riverfront.

Underground Storage Tanks (USTs)

According to DEQ UST records, G-P installed a 10,000 gallon gasoline UST at the facility in 1972, and 5,000 gallon and 10,000 gallon diesel fuel USTs in 1975. The 5,000 gallon diesel fuel UST was removed in 1988, after 13 years of service. There are no DEQ

records to indicate that the tank leaked. In G-P's June 1999 response to a February 1999 DEQ Site Assessment Information Request, the company indicated that no soil contamination was discovered during the tank decommissioning. It is not known where the former 5,000 gallon UST was located.

Leaking Underground Storage Tank (LUST) #26-89-0133

A small amount of subsurface soil contamination was encountered when a 10,000 gallon gasoline storage tank was removed in 1989. The release was reported to both DEQ's Spill Program (EMD Incident 89-638 / NWR Spill F-25) and DEQ's UST Program (LUST #26-89-0133). The tank had been in service for 17 years, and was being used to store gasoline at the time of decommissioning, although it had earlier been used to store diesel fuel. Precise location of the tank was not described.

Approximately 10 cubic yards of soil contaminated with 900 ppm total petroleum hydrocarbons (a single sample analyzed by EPA analytical method 418.1), but no detectable gasoline or BTEX (Benzene, Toluene, Ethylbenzene, Toluene), was removed from the tank excavation pit, placed on Visqueen sheeting, and allowed to aerate and naturally biodegrade on site. Two soil samples collected from the bottom of the tank excavation pit (10 feet below ground surface (bgs)) and two feet below the bottom of the excavation (12 feet bgs) contained no detectable TPH by method 418.1. Groundwater was not encountered during the tank removal and soil excavation activities, although subsequent information indicates that groundwater at the site can be as shallow as 6 to 11 feet bgs (discussed later in this document's Site Evaluations section). The tank excavation was backfilled with clean soils and crushed rock.

When sampled and analyzed 18 months later, four samples from the contaminated soil stockpile contained from 38 to 110 ppm TPH (by EPA analytical method 418.1), but no detectable gasoline or diesel fuel (analytical detection limits of 10 and 20 ppm, respectively), indicating that some of the contamination was evidently attributable to heavier oils. The presence of heavier oils in soil excavated from the tank pit suggests the possibility of an additional release source in this area.

Since confirmatory samples from the bottom of the tank excavation pit contained no detectable TPH, and residual TPH concentrations in the soil remediation stockpile were below the DEQ Matrix Level 2 concentration of 500 ppm, DEQ's LUST program concluded in February 1991 that the cleanup complied with existing LUST cleanup rules and required no further action.

The final cleanup report did not specify where the contaminated soils were remediated, and did not describe any runoff control measures that may have been employed during soilpile remediation. Final disposition of the remediated soils was not specified.

Without proper runoff controls, contamination from the soil remediation stockpile could have discharged to the river. PAHs may have been present in the soil stockpile, and could have contributed to the elevated PAH concentrations that were detected in river sediments at SD005.

LUST #26-95-0052

In October 1994, G-P notified DEQ of its intent to replace an existing, 20-year old, 10,000 gallon⁶ diesel fuel UST with a diesel fuel aboveground storage tank (AST), although tank removal activities evidently did not commence until March 1995. The tank was located between two sets of railroad tracks, about 30 feet from the site's petroleum loading rack.

A total of about 69 tons of petroleum contaminated soil was removed during the tank decommissioning. A sample of the excavated soils contained 3,160 ppm TPH, but no detectable gasoline or heavier oils. Two confirmation soil samples collected at 12 feet bgs from the bottom of the excavation pit contained 21 ppm TPH and less than 20 ppm TPH. No groundwater was encountered during the tank removal activities; the excavation pit was backfilled with clean sands and crushed rock.

The 69 tons of contaminated soil was sent to Marion County for thermal treatment and landfilling. Two drums of residual sludge that were collected from the tank were sent to Texas to be burned.

In September 1995, DEQ's LUST program concluded that the tank release required no further action under LUST Cleanup Rules.

Although no groundwater was encountered during the tank removal activities, recently-determined groundwater static water levels at the site suggest that soil contamination could have been in seasonal contact with groundwater. Site groundwater could be contaminated with petroleum constituents.

⁶ Variousy described as a 12,000 gallon tank.

Spills

On April 27, 1976, PGE contacted USCG to report a release of about 4 ounces of diesel fuel from a fuel transfer hose at the G-P dock. The Spill Report does not mention any cleanup that may have occurred, or any DEQ follow-up.

Site Evaluations

OWRD well log records indicate that G-P installed four monitoring wells and advanced seven push-probe borings plus an additional hollow stem auger boring on the Linnton Fiber Terminal facility in March 1999. Static groundwater levels, determined at each of the twelve locations, ranged between 6 and 11 feet bgs. Boring depths ranged between 14 and 25 feet for all but the single, undeveloped hollow stem auger boring which was advanced to 45 feet bgs. The various borings encountered silts, silty sands, sand, and gravels.

Three deeper mud rotary borings were evidently advanced during the following month to depths ranging between 65 and 80 feet bgs. Static water levels were not recorded at these three borings. Basalt or rock was encountered in each of the three boring at depths ranging between 60 and 74 feet bgs.

Results from any groundwater sampling of these wells were not included in G-P's June 1999 response to DEQ's Site Assessment Information Request.

Site Hydrogeology

The G-P Linnton Fiber Terminal facility lies in the northern-most Portland Basin, a major north-southeast trending sediment filled structural depression found in the northern part of the Willamette River valley and adjoining Columbia River valley (Swanson et al, 1993). The basin is filled with recent alluvium, Pleistocene cataclysmic flood deposits, Miocene to Holocene nonmarine sedimentary rocks, and is underlain by Eocene to Miocene volcanic and sedimentary rocks that are exposed along the basin margins.

The youngest deposits are recent alluvium (silt, sand and gravel mixtures) characteristic of an active fluvial environment. These are made up of shoreline, river channel, and adjacent floodplain deposits.

The G-P property lies between NW Saint Helens Road and the Willamette River, at the base of the Portland Hills. The eastern ¾ of the facility appears to lie within the river's 100-year flood plane, according to national Flood Insurance Rate Maps. Five to 15

feet of fill, comprised of silt and silty gravel, may overlies native alluvial floodplain deposits (silty sand) at the site. Basalt has been encountered at the site at 60 to 74 feet bgs. In March 1999, static water levels for the site's shallow groundwater formation ranged between 6 and 11 feet bgs.

Aquifers in floodplain deposits generally are unconfined and localized due to heterogeneity of the deposits. Occurring at various depths in the site vicinity, Columbia River Basalts (CRB) underlie these alluvial deposits. Deep wells installed in fractured CRB can be very productive and important supply wells.

G-P site elevation ranges from less than 10 to about 35 feet above mean sea level; the site appears to have a downward slope toward the northeast and north-northeast. Since the early 1970's, surface runoff from the Portland Hills has generally been directed to the river through storm sewers that underlie the northern end of the G-P facility, and the neighboring Owens-Corning facility. The stormwater sewer at the northern end of the G-P property discharges to the river near the northeast corner of the G-P property (see Photo D of Plate 1, Photo A of Plate 2, and Figure 4).

Pathway Summary

The G-P property lies in an area of mixed industrial, residential, and recreational use. Approximately five single family residences and two multifamily dwellings lie within 1/4 mile of the site. The nearest residence is located about 1,000 feet south of the site, along NW Saint Helens Road. Saint Brigetta Church lies about 300 feet south of the G-P property.

The G-P facility is completely surrounded by chain-link fencing, and is periodically patrolled by a private security contractor. Potable drinking water is supplied by the City of Portland. The facility does not have access to city sanitary sewers; sanitary wastes are discharged to a septic tank and subsurface disposal system. Underground oil (Olympic Pipeline Company) and high-pressure gas (Northwest Natural Gas Company) pipelines are located along the facility's southwestern boundary. Although most of the site surface is paved with blacktop, utility trench workers could be exposed to potential subsurface contamination through inhalation, dermal contact, or incidental soil ingestion.

Oregon Water Resources Department (OWRD) has well logs for 34 domestic wells within 1.5 miles of the G-P property. Three domestic wells are located within the same section (section 34 of Township 2N, Range 1W, Willamette Meridian) as the G-P property, although the specific locations of these wells could not be readily ascertained. The nearest well-defined domestic well is located about 0.5 miles

northwest of the site. The well is a fully cased, 320-foot deep well in basalt, and is unlikely to be affected by any contaminants at the G-P site.

An apparently unused well having a 6 to 8 inch diameter steel casing was observed near the northeast property line of the neighboring ACF Industries site during a June 1989 DEQ site visit. Historic use and construction details for the well are unknown, and no well log has been located for the well. It is unknown if this well still exists, although WRD has no well decommissioning record for the well.

The two nearest significant wetlands areas are located along the G-P site's northern boundary, and about 2,500 feet to the northwest of the G-P property, beyond PGE's Harborton substation facility. The northern extent of the City of Portland's Forest Park is located about 500 feet southwest of the G-P property, across NW Saint Helens Road. In this area, Forest Park is largely undeveloped, primarily offering hiking trails and refuge to wildlife.

Both recreational and subsistence fishing occur within the Lower Willamette River. Commercial fishing within the Portland Harbor is limited to a small Pacific lamprey fishery. Recreational boating, water skiing, swimming, and beach use also occur within the Harbor.

The Lower Willamette River provides habitat for 39 fish species, including populations of wild cutthroat trout, rainbow trout, and mountain whitefish. White sturgeon are plentiful within the Harbor. The Harbor is also an important migratory corridor, nursery habitat, and adult foraging area for two runs of chinook salmon, two runs of steelhead trout, and individual runs of coho and sockeye salmon.

Upper Willamette River populations of chinook and steelhead, which migrate through the Harbor, are listed as threatened species under the Federal Endangered Species Act. The Pacific lamprey is considered a federal species of concern.

Great blue herons, cormorants, osprey, mergansers, kingfishers, peregrine falcons, and bald eagles routinely forage within the Harbor. The area is also part of the wintering range for the Aleutian Canada goose. All are protected under the Migratory Bird Treaty Act. The Aleutian Canada goose is federally listed as threatened species. The peregrine falcon was federally listed as an endangered species, but was removed from the list in August 1999. The bald eagle is a threatened species, but was recently proposed to be removed from this list.

There is little data on the nature and extent of the benthic community within Portland Harbor sediments. However, it is known that contamination in the benthos, which is a protected beneficial

use, can be the source of food-chain effects that radiate up to the species listed above, including humans.

The Lower Willamette River is water quality limited for the following toxic compounds:

- Dioxins/furans (water column and sediments);
- Mercury (fish tissue);
- Pesticides (water column and sediments);
- Polynuclear Aromatic Hydrocarbons - PAHs - (water column and sediments); and
- Trace metals (water column and sediments).

DEQ's Water Quality Division is developing Total Maximum Daily Load requirements (TMDLs) for these contaminants. A TMDL for dioxins (2,3,7,8-tetrachlorodibenzo-p-dioxin) was established in 1991.

Conclusions/Recommendations

Contamination of river sediments near the Georgia-Pacific Linnton Fiber Terminal may represent a significant threat to human health and aquatic life within the river. The specific nature and significance of these threats cannot be determined without further characterization and delineation of sediment contamination in river.

In addition, the following issues apply to the G-P site:

- A Preliminary Assessment (PA) with sampling is needed to determine the extent to which the G-P Linnton Fiber Terminal site has contributed to sediment contamination within the Willamette River. The sampling program should include the collection of surface and subsurface sediment data that focuses on:
 - the G-P dock area,
 - stormwater and cooling water outfalls,
 - areas where surface runoff is likely to have discharged, and
 - near the historic sawmill and creosote wood-treating plant on the upstream half of the site.

Investigations in the dock area should examine not only potential discharges from PGE's historic fuel deliveries, but also consider potential contamination from past and current ship berthing activities such as potential fuel losses, bilge water discharges, or

paint sloughing (including TBT-containing paints). Sediment sampling should also consider the possibility that ship prop-wash and past sediment dredging activities may have redistributed some of the sediment contamination near the site.

A PA is needed for the upland portions of the G-P site. This PA should focus on potential upland contaminant sources including:

- potential groundwater contamination near the locations of two former leaking underground petroleum storage tanks, and
- potential subsurface soil and groundwater contamination at the locations of the historic sawmill and creosote wood-treatment plant located on the southeastern quarter of the facility.

Maintenance dredging records for the G-P site should be examined to determine if sediments were adequately tested prior to dredging, and to determine where dredging wastes may have been disposed.

DEQ has determined that these actions warrant a high priority for follow-up. There is, however, insufficient information at this time to proposed the G-P site for addition to DEQ's Confirmed Release List (CRL).

Other

Upland areas of the PGE Harborton facility and the Alder Creek Lumber Company property where dredge wastes from G-P's 1972 riverfront dredging may have been landfilled should also be investigated. Contaminants that may have been released from historic ACF/Richmond railcar washing operations, and at sawmill and creosote wood-treating operations that were conducted on the southeastern quarter of the G-P facility, could have affected river sediment quality. Upland contaminants at the two off-site sediment disposal areas could represent a continuing threat to river and wetlands area sediments.

References

DEQ consulted the following general references in preparing this Strategy Recommendation:

1. Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc., for USEPA, May 1998.

2. Georgia-Pacific's response to DEQ's February 11, 1999, Site Assessment Information Request, June 1, 1999.
3. DEQ LUST File #26-89-0130.
4. DEQ LUST File #26-95-0052.
5. DEQ Site Assessment Strategy Recommendation for the ACF Industries site, ECSI #794, August 6, 1999.
6. U.S. Army Corps of Engineers Application for Permit to Discharge or Work in Navigable Waters and Their Tributaries / Permit Number 071-OYA-2-000725, issued to Georgia-Pacific, February 23, 1972.
7. Letter from Keith M. Bentley, Georgia-Pacific, to Thomas Bispham, DEQ, regarding Air Contaminant Discharge Permit No. 26-2911, May 27, 1981.
8. Letter from Fritz Skirvin, DEQ, to Keith Bentley, Georgia-Pacific, regarding variance for 250 micron rule, July 15, 1981.
9. DEQ Spill Report, Georgia-Pacific Chip Dock, April 28, 1976.
10. Stormwater Monitoring Data from G-P Linnton Fiber Terminal, December 1992-93, 1994, and 1996-97, from DEQ Water Quality Permit Files for G-P Linnton Fiber Terminal.
11. Letter from DEQ to Robert Waldvogel, Georgia-Pacific Corporation, Notice of Noncompliance, February 8, 1995.
12. Letter from Dennis M. Chorba, Georgia-Pacific Corporation Legal Department, to DEQ Director L.B. Day, regarding overflows of wastewater from ACF property onto G-P property, December 14, 1971.
13. Flood Insurance Rate Map, City of Portland, Oregon, Community Panel Number 410183-005-C, October 1982.
14. Oregon Water Resource Division's GRID well log database.
15. DEQ Hazardous Waste File, Georgia-Pacific West Inc. Linnton Fiber.
16. METROSCAN property database for Multnomah County, 1999.
17. US Army Corps of Engineers aerial photos of the Willamette River, May 1936, May 1957, December 1963, December 1977, and February 1992.

Attachments

- Table 1: River Sediment Contamination Data collected near the Georgia-Pacific Linnton Fiber Terminal
- Table 2: Comparison of Upstream and Downstream Shallow Sediment Contaminant Concentrations
- Figure 1: River Sediment Sampling Locations near the Georgia-Pacific Linnton Fiber Terminal
- Figure 2: Georgia-Pacific Linnton Fiber Terminal located on 7.5-minute USGS Topo Quad, Linnton, OR.
- Figure 3: Georgia-Pacific Linnton Fiber Terminal identified on METRO Aerial Photo of Portland Harbor, 1997.
- Figure 4: Georgia-Pacific Linnton Fiber Terminal Facility Layout.
- Figure 5: 1957 Aerial Photo of Kingsley Lumber Company / West Oregon Lumber Company Facilities Formerly Located on the Georgia-Pacific Linnton Fiber Terminal Property
- Figure 6: 1950 Sanborn Fire Insurance Map Depicting West Oregon Lumber Company Facilities Located on the Georgia-Pacific Linnton Fiber Terminal Site
- Plate 1:
- Photo A: G-P Facility from entrance gate at NW corner of site; viewed toward northeast; 2/4/99.
- Photo B: G-P facility (in background) from entrance road to Owens-Corning / Trumbull Asphalt facility; viewed toward north; 2/4/99.
- Photo C: G-P riverfront from downstream. Wetlands area and BPA power line easement are located on right; viewed toward south; 2/2/99.
- Photo D: Stormwater outfall near northeast corner of G-P facility; viewed toward southwest; 2/2/99.

Plate 2:

- Photo A: Close-up of stormwater outfall near northeast corner of G-P facility; viewed toward southwest; 2/2/99.
- Photo B: Conveyor (upper, blue, inclined structure) used to transfer wood chips onto bulk cargo ships at G-P dock. Horizontal blue structure with yellow hand railing is gangway to dock; viewed toward southwest; 2/2/99.
- Photo C: White tank truck along northeast perimeter of G-P site that appears to be discharging water to river; viewed toward west; 2/2/99.
- Photo D: G-P facility's wood chip conveyor systems, chip storage area retaining wall, and covered tilt-up truck dumping station; viewed toward northwest; 2/2/99.

TABLE 1

Georgia-Pacific: River Sediment Contaminant Concentrations (1997)

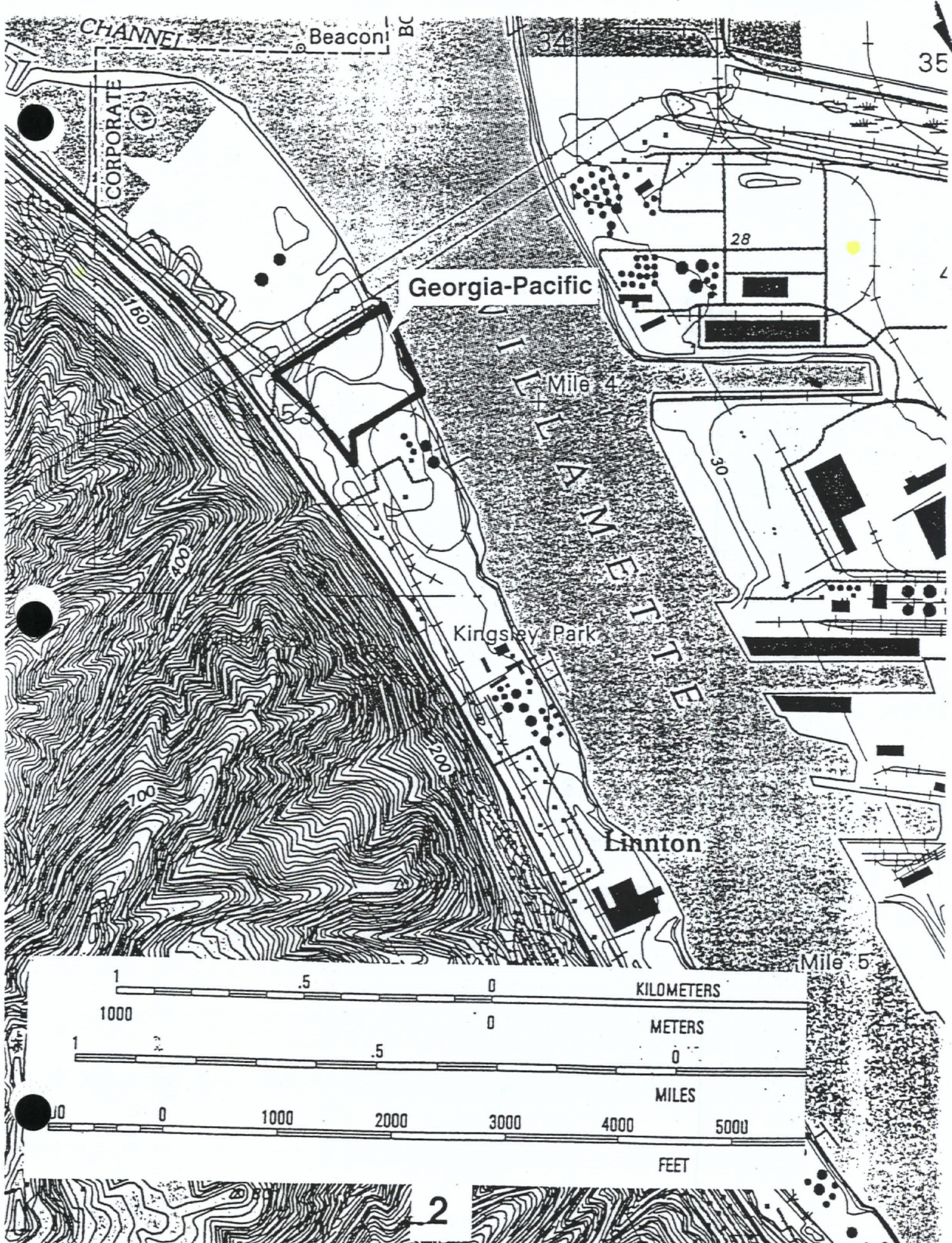
Contaminant	Units	Down-Stream SD003	At G-P Dock SD005	Up-Stream SD011	Apparent Portland Harbor Sediment Baseline Maximum Value
Aluminum	ppm	28000	32100	36900	42800
Antimony	ppm	<4	<5	<5	<5
Arsenic	ppm	4	6	5	<5
Barium	ppm	155	167	176	195
Beryllium	ppm	0.48	0.54	0.60	0.7
Cadmium	ppm	0.3	0.4	0.4	0.6
Chromium	ppm	27.3	32.7	35.5	41
Cobalt	ppm	16.4	18.7	18.0	19.7
Copper	ppm	28.6	37.1	40.0	60
Iron	ppm	35600	47600	40900	45000
Lead	ppm	12	16	14	30
Manganese	ppm	515	725	679	810
Mercury	ppm	0.12	0.07	0.06	0.10
Nickel	ppm	24.1	27.3	27.0	32
Selenium	ppm	11	11	11	15
Silver	ppm	0.6	0.7	0.7	1.4
Thallium	ppm	19	23	23	13
Titanium	ppm	---	---	1960	2075
Vanadium	ppm	83.6	93	99.5	112
Zinc	ppm	100	114	105	118
2-Methylnaphthalene	ppb	92	74	140	150
4-Methylphenol	ppb	23	32	24	680
Benzoic Acid	ppb	<190	<190	<200	<200
Benzyl Alcohol	ppb	<19	<19	<20	<20
bis(2-Ethylhexyl)phthalate	ppb	<56	<120	<170	390
Butylbenzylphthalate	ppb	<19	<19	<20	<20
Carbazole	ppb	67	37	26	100
Di-N-Butylphthalate	ppb	<19	<19	<20	<20
Di-N-Octylphthalate	ppb	<19	<19	21	<20
Dibenzofuran	ppb	27	27	25	100
Dimethylphthalate	ppb	<19	<19	<20	<20
Pentachlorophenol	ppb	110	<96	<99	Detect
Phenol	ppb	<19	<19	<20	<20
LPAHs (total)	ppb	1962	1213	1087	700
HPAHs (total)	ppb	10910	6260	2522	2400
DDTs (total)	ppb	---	---	25.0	220
PCBs (total)	ppb	---	---	<40	<180
Organotins (total)	ppb	---	---	81	300
2,4-D	ppb	---	---	---	<3.3
2,4-DB	ppb	---	---	---	<5
TOC	%	1.8	1.5	1.8	2.0
Water Depth	ft	11.5	21	20	---
Sediment Sample Depth	cm	0-10	0-16	0-17	---
Off Shore Distance	ft	175	180	75	---

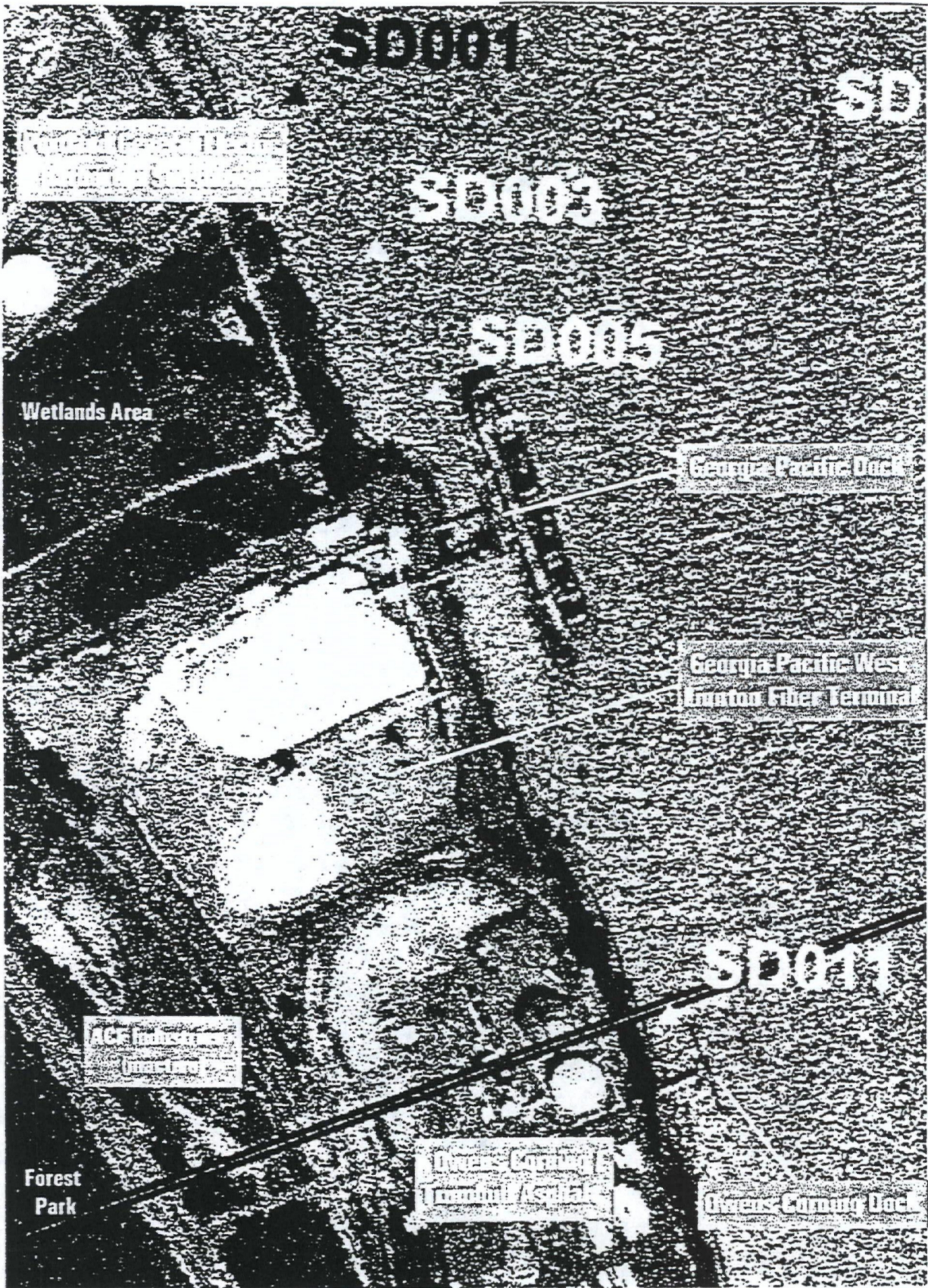
TABLE 2

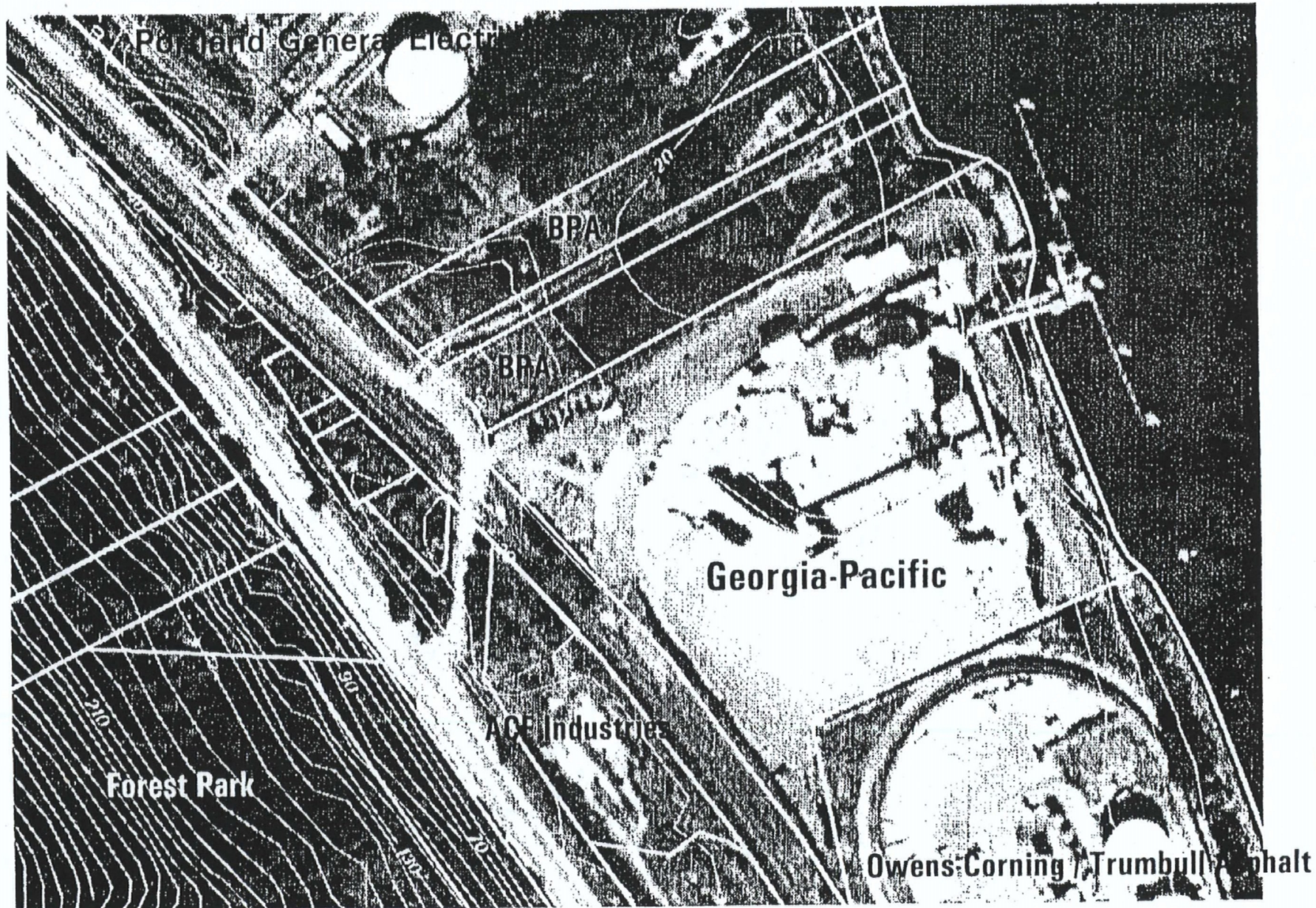
Georgia-Pacific:

Comparison of Upstream and Downstream Shallow Sediment Contaminant Concentrations (1997)

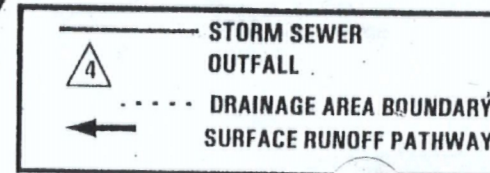
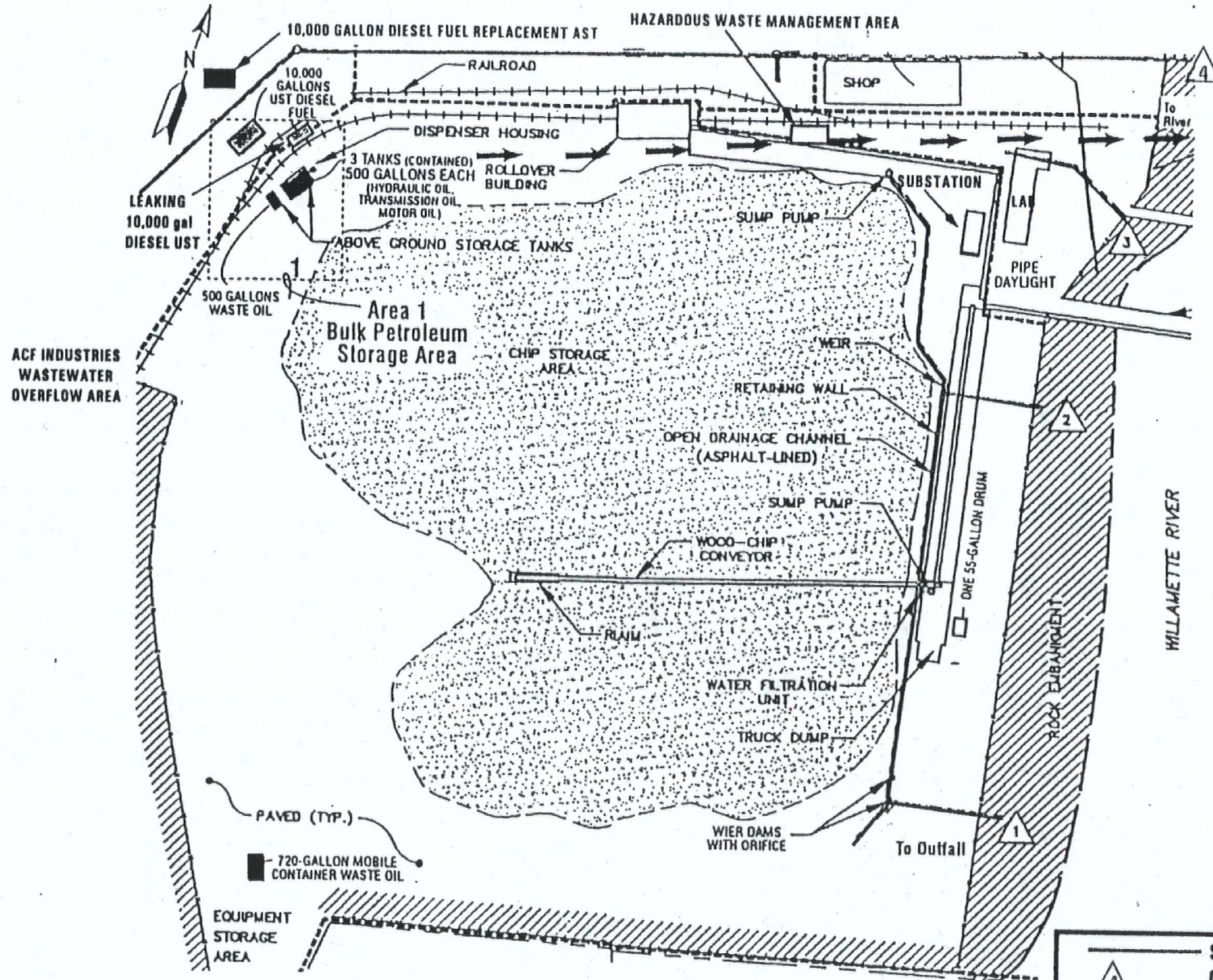
Contaminant	Concentration at G-P (SD005) vs Downstream Concentration (SD003)	Concentration at G-P (SD005) vs Upstream Concentration (SD011)
Aluminum	+ 15 %	- 15 %
Arsenic	+ 50 %	+ 20 %
Barium	+ 8 %	- 5 %
Beryllium	+ 12 %	- 11 %
Cadmium	+ 33 %	same
Chromium	+ 20 %	- 8 %
Cobalt	+ 14 %	+ 4 %
Copper	+ 30 %	- 26 %
Iron	+ 34 %	+ 16 %
Lead	+ 33 %	+ 14 %
Manganese	+ 41 %	+ 7 %
Mercury	- 71 %	+ 17 %
Nickel	+ 13 %	+ 1 %
Selenium	same	same
Silver	+ 17 %	same
Thallium	+ 21 %	same
Vanadium	+ 11 %	- 7 %
Zinc	+ 4 %	+ 8 %
LPAHs (total)	- 62 %	+ 12 %
HPAHs (total)	- 74 %	+148 %
2-Methylnaphthalene	- 24 %	- 89 %
Carbazole	- 81 %	+ 42 %
Dibenzofuran	same	+ 8 %
4-Methylphenol	+ 39 %	+ 33 %
TOC	- 20 %	- 20 %



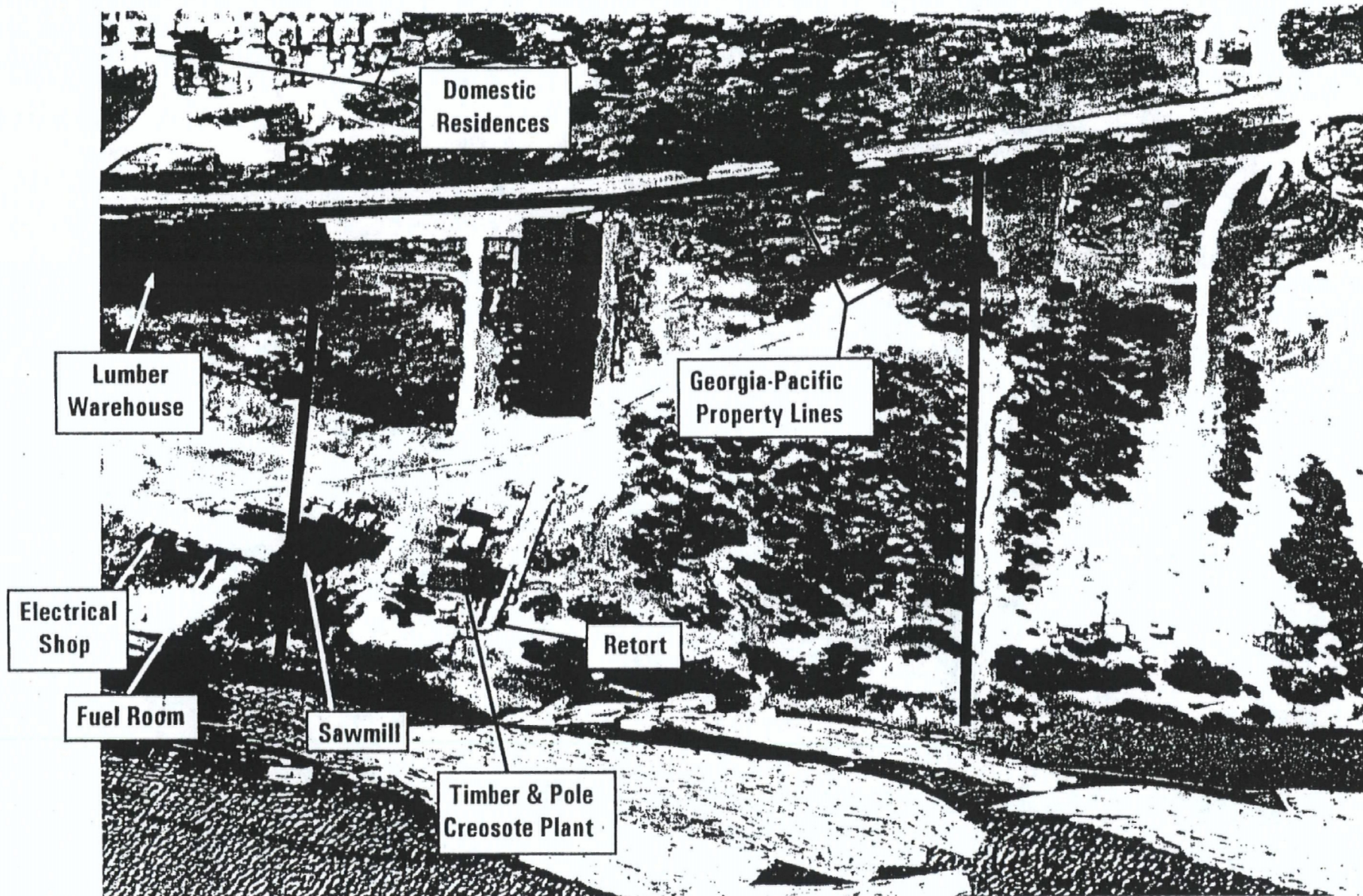




1997 Aerial Photo; Tax Lot Lines; 10 ft elevation contours
by METRO



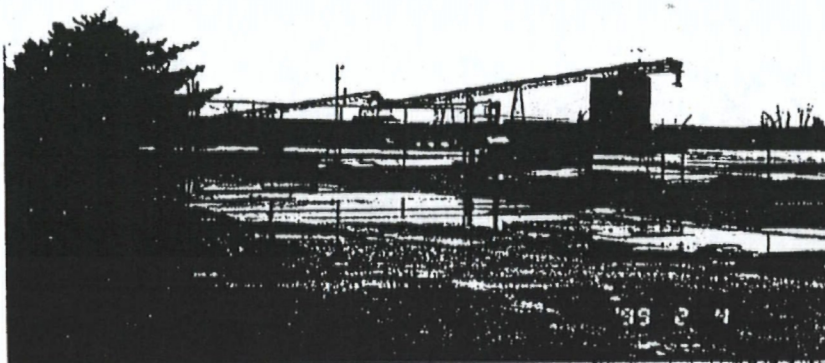
Location of former Kingsley Lumber Company / West Oregon Lumber Company facilities (through late 1950s) on current Georgia-Pacific Fiber Terminal site



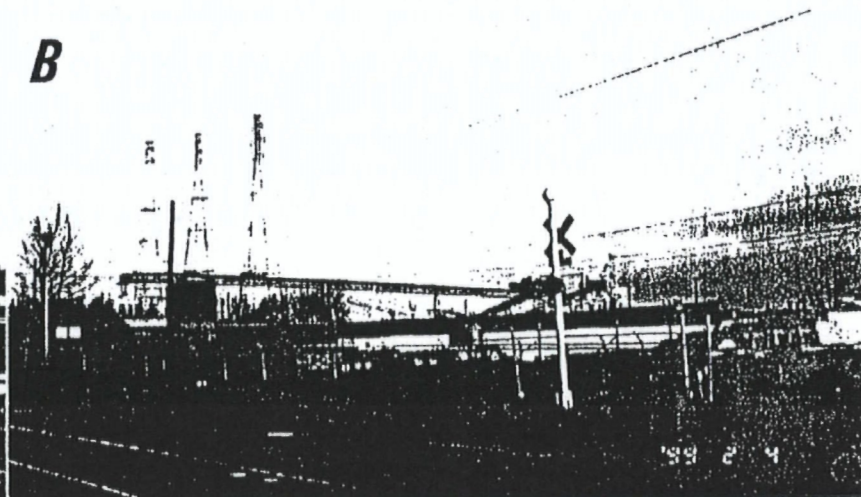
May 1957 aerial photograph, US Army Corps of Engineers.

PLATE 1

A



B



C



D

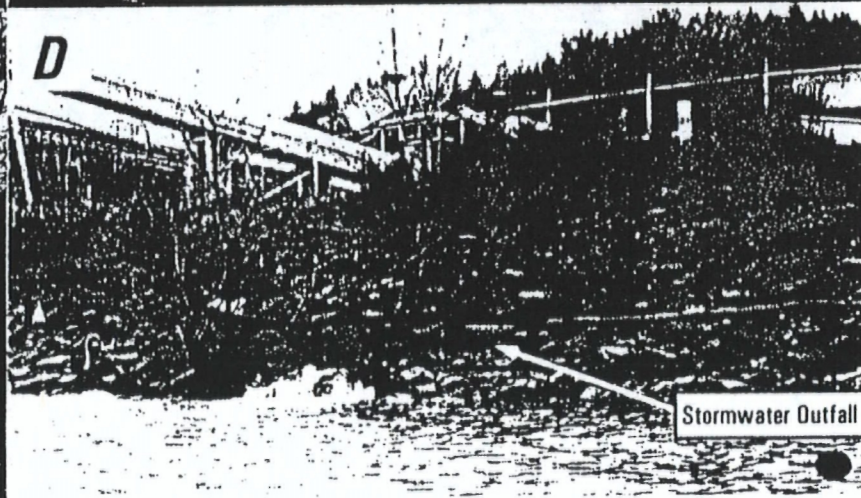
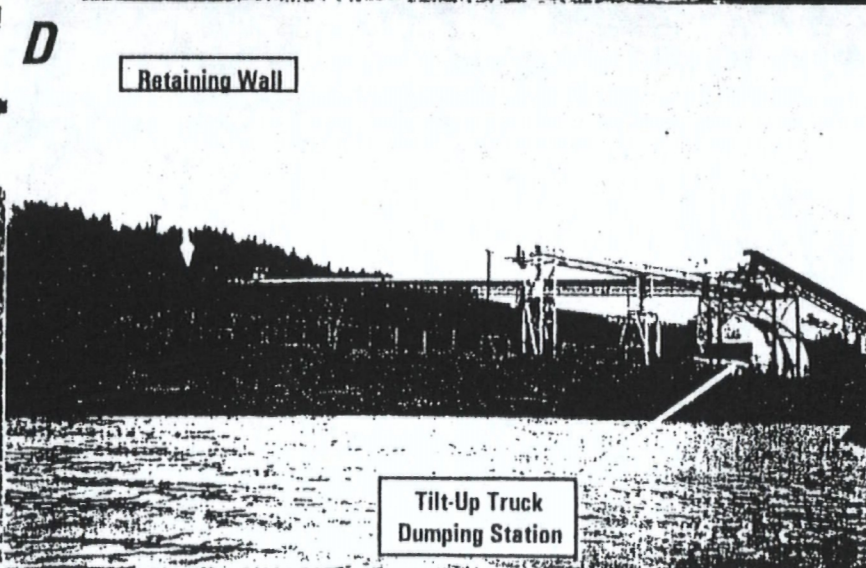
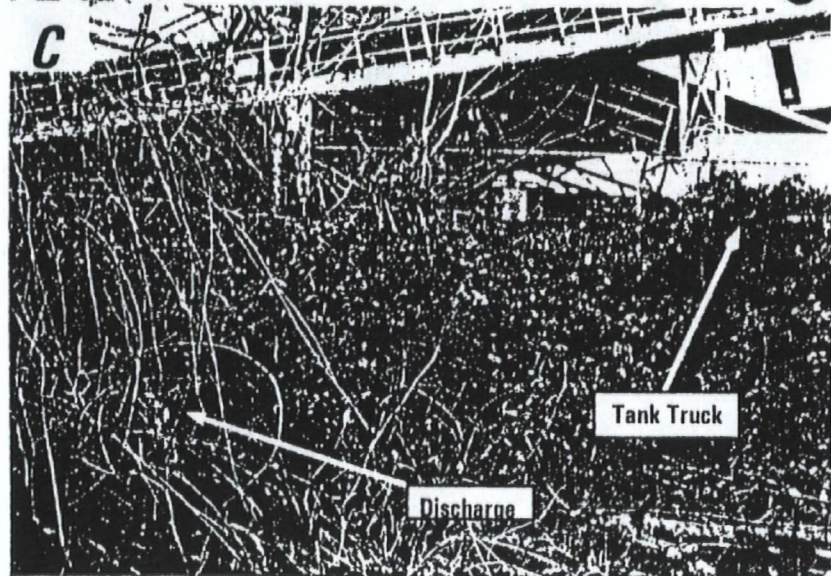
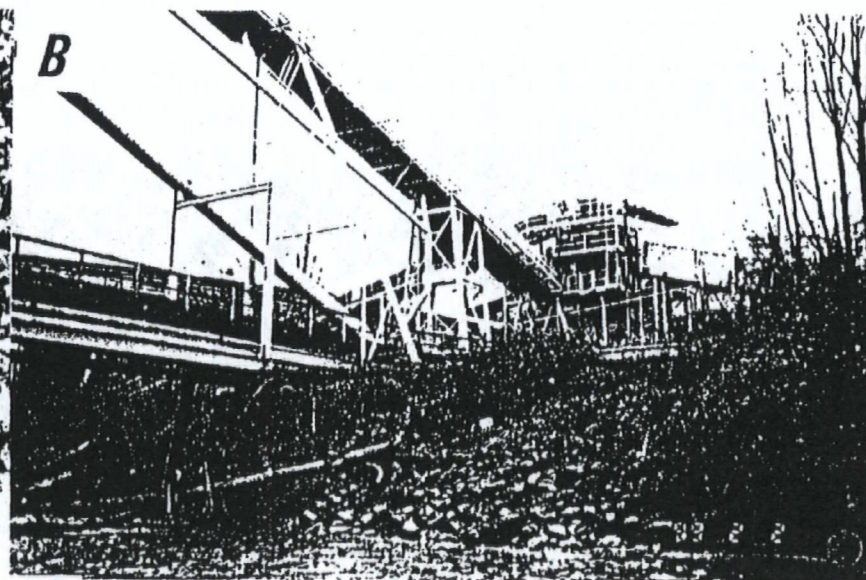


PLATE 2





Querying DEQ's ECSI Database: Site Summary Report

Details for Site ID 2370

shows data entered as of October 16, 2000 at 8:01:48 AM

See the bottom of this page for a key to certain acronyms and terms used in the report below.

Site Information

Site ID: 2370	Site Name: Georgia-Pacific - Linnton Fiber Terminal	CERCLIS No:
	Address: 12222 NW Marina WAY Portland 97231	
	County: Multnomah	Region: Northwest
	Investigation Status: Suspect site requiring further investigation	NPL Site: N
		Orphan Site: N Study Area: N
Property:	Twنشp/Range/Sect: 2N , 1W , 34	Tax Lots: 32 (Parcel No. R97134 0320)
	Latitude: 45 deg. 36 ' 41.01"	Longitude: 122 deg. 47 ' 28.14"
		Site Size: 21.51 acres

Other Site Names:

Georgia-Pacific West
Portland Harbor Sediment Study
Georgia-Pacific / Western Wood Prods Manuf Divn

Operations:

Name: Georgia Pacific West
Comments: .
Years of Operation: 1972 - 1996
SIC Code: 2499

Operating Status: Inactive

Contamination Information

Hazardous Substances/Waste Types:

Manner and Time of Release:

Contamination Information:

Source(s) of river sediment contamination unclear at this time. XPA of G-P facility needed to clarify potential site contribution issues.

Weston sampling results from the Portland Harbor Sediment Study revealed elevated concentrations of thallium, PAHs, arsenic and iron in river sediments at the downstream end of the G-P dock, and elevated concentrations of thallium, PAHs, mercury, and pentachlorophenol in sediments collected about 340 feet further downstream. Contaminated washwater from the former ACF railcar repair facility located west of the G-P facility is believed to have overflowed onto the northwest corner of the G-P property between 1965 and 1980.

Pathways:

Primary pathway of concern is potential impacts to aquatic life (including benthic community) in the Willamette River. Other potential pathways of concern would include potential impacts to a wetlands area along the site's northern boundary, or potential utility trench worker exposures if subsurface contamination is present.

Environmental/Health

Threats:

Status of Investigative or Remedial Action: (6/10/99 JMW/SAP) Based on initial sampling results from a river sediment quality study, the Georgia Pacific - Linnton Fiber Terminal facility has been identified as a potential source of contamination to the Portland Harbor. A Site Assessment Review Notice was sent on February 11, 1999. Response from Georgia Pacific West was received on June 4, 1999. A site screening is scheduled (level I priority). (10/12/99 SMF) A review of site history indicates that an XPA of the site with additional river sediment sampling is warranted. (12/6/99 JMW/SAP) Signed Voluntary Letter Agreement on October 12, 1999. (4/7/00 TBG/VCP) Georgia Pacific submitted a Preliminary Assessment in November 1999. Supplemental PA and Sediment Sampling Plan submitted in January 2000. (9/20/00 TBG/VCP) Expanded Preliminary Assessment (XPA) submitted in August 2000.

Data Sources:

Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc. for US EPA, 5/98; LUST Files #26-89-0130 and #26-95-0052.

Substance Contamination Information

Substance	Media Contaminated	Concentration Level	Date Recorded	Lab Data	Agency Observation	Owner Operator Admission
POLYAROMATIC HYDROCARBONS (PAH)	Sediment	up to 23 ppm.	05/01/2000	Y		

Investigative, Remedial and Administrative Actions

Action	Start Date	Compl. Date	Resp. Staff	Agency Code	Region	Lead Pgm
Site added to database	06/10/1999	06/10/1999	Janelle Waggy	DEQ	NW	VCS
Site Screening recommended (EV)	06/10/1999	06/10/1999	Steve Fortuna	DEQ	NW	SAS
SITE EVALUATION	08/26/1999	09/21/1999	Steve Fortuna	DEQ	NW	SAS
Insufficient information to list	09/21/1999	09/21/1999	Steve Fortuna	DEQ	NW	SAS
State Expanded Preliminary Assessment recommended (XPA)	09/21/1999	09/21/1999	Steve Fortuna	DEQ	NW	SAS
VCS Waiting List	10/12/1999	10/12/1999	Janelle Waggy	DEQ	NW	VCS
Letter Agreement	10/12/1999	10/12/1999	Eric Blischke	DEQ	NW	SAS
BASIC PRELIMINARY ASSESSEMENT	10/13/1999		Thomas Gainer	DEQ	NW	VCS

Key to certain acronyms and terms in this report:

CERCLIS No.: The U.S. EPA's Hazardous Waste Site identification number, shown only if EPA has been involved at the site.

Region: DEQ divides the state into three regions (E, NW, and W); the regional office shown is responsible for site investigation/cleanup.

NPL Site: Is the site on EPA's Superfund List? (Y/N).

Orphan Site: Has DEQ's Orphan Program been active at this site? (Y/N). The Orphan Program cleans up high-priority sites where owners and operators responsible for the contamination are absent, or are unwilling or unable to use their own resources for cleanup.

Study Area: Is this site a Study Area? (Y/N). ECSI assigns unique Site ID numbers to both individual sites and to Study Areas, which are groupings of individual ECSI sites that may be contributing to a larger, area-wide problem.

SIC Code: The Standard Industrial Classification code assigned to the operation described in this part of the report.

Pathways: A description of human or environmental resources that site contamination could affect.

Lead Pgm: This column refers to the Cleanup Program affiliation of the DEQ employee responsible for the action shown. SAS = Site Assessment; VCS = Voluntary Cleanup; SRS = Site Response (enforcement cleanup).

[Return to ECSI Query Home Page](#)

[Return to Cleanup and Spills Page](#)